Health Risk Behaviors in the State of Michigan

2007 Behavioral Risk Factor Survey

21st Annual Report

Michigan Department of Community Health

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of Community Health
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2007 Behavioral Risk Factor Survey

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2007 MiBRFS

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We are especially grateful to the residents of Michigan who agreed to participate in this survey.

2007 MiBRFS

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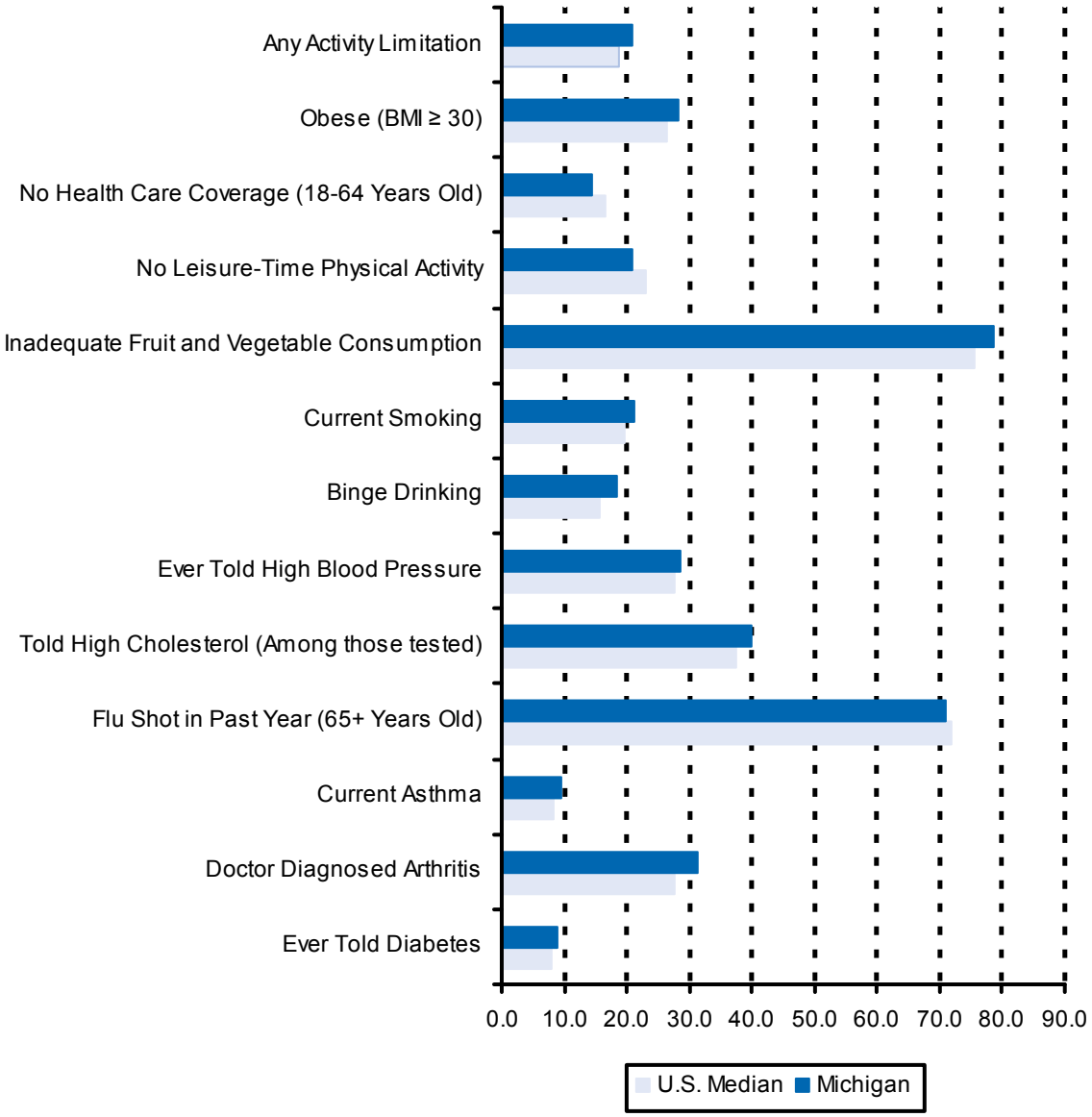
Summary

2007 MiBRFS

This report presents estimates from the 2007 MiBRFS, a statewide telephone survey of Michigan residents aged 18 years and older. It is the only source of state-specific, population-based estimates of the prevalence of various behaviors, medical conditions, and preventive health care practices among Michigan adults. The survey findings are used by public health agencies, academic institutions, non-profit organizations, and others to develop programs to promote the health of Michigan citizens.

All the results from the 2007 MiBRFS presented in this report have been weighted as described in the methods section and can be interpreted as estimates of the prevalence rates of various health risks and behaviors among the general adult population of Michigan.

Selected Risk Factors / Health Behaviors - 2007 CDC BRFSS
Michigan vs. U.S. Median*



* The median value of the prevalence estimates compiled from 50 U.S. states, three territories, and Washington, D.C. that participated in the 2007 CDC BRFSS.

Summary, continued

Public Health Implications of Findings

A number of themes emerge from the findings of the 2007 MiBRFS that have implications for public health.

Michigan adults are becoming more active, but obesity is still on the rise.

The results of the 2007 MiBRFS indicate that the prevalence of inadequate physical activity among Michigan adults has decreased, thus indicating that Michigan adults are becoming more active. In 2007, an estimated 49.4% (47.9-51.0) of Michigan adults did not engage in recommended levels of physical activity compared to 55.2% (53.4-57.0) in 2001. Despite this increase in physical activity between 2001 and 2007, survey findings indicate that Michigan adults are becoming more obese. An estimated 28.4% (27.1-29.9) of Michigan adults were classified as being obese in 2007, compared with 21.2% (19.7-23.3) in 1998. In addition, the percentage of Michigan adults who consume fruits and vegetables five or more times per day (1998: 26.4% vs. 2007: 21.3%) has not improved since 1998. MDCH has a number of programs designed to increase physical activity and promote healthy eating among Michigan adults and children.

Access to health care is an increasing problem.

In 2007, an estimated 14.4% of Michigan adults aged 18-64 had no health care coverage, an increase from 9.3% in 1998. Furthermore, the percentage of adults who have not had a routine checkup in the past year (1998: 26.2% vs. 2007: 30.5%) and the percentage of adults who have not been able to receive proper health care due to cost (1998: 8.6% vs. 2007: 11.7%) have also increased between 1998 and 2007. Given that adults without coverage are less likely to access health care services and delay getting needed attention, this increasing lack of coverage heightens the need for public health focus on primary and secondary prevention, making public health services even more important for the well being of Michigan adults. Public health programs that provide services to the uninsured, such as the Smokers Quit Kit and Quit Line, Breast and Cervical Cancer Programs, and the Vaccine Exchange Network, are crucial to partially fill this gap.

Disparities remain in risk behaviors, preventive care measures, and disease prevalence.

The Michigan adult population continues to experience disparities in health. These disparities are most often found in older adults, females, Blacks, adults with less than college education, and those living in lower income households. Young adults are more likely than older adults to report a lack of health care coverage, no personal health care provider, binge drinking, and having been diagnosed with asthma. Males are more likely than females to report no personal health care provider, inadequate fruit & vegetable consumption, current cigarette smoking, binge drinking, and no routine checkup in the past year. Black adults are more likely than White adults to report fair to poor general health, obesity, high blood pressure, no health care access in the past year due to cost, no leisure time physical activity, and having been diagnosed with diabetes. Adults without a college education or who live in lower income households experience disparities on virtually all risk indicators measured by the MiBRFS.

These disparities point to a need to integrate public health action across disease areas to focus on vulnerable populations and to better understand the synergistic effects of experiencing high rates for multiple risk factors and diseases. The MDCH Michigan Primary Care Initiative, undertaken to resolve the major system barriers that impede the delivery of preventive services and limit the optimal management of chronic disease in primary care settings, is one example of efforts to integrate public health action.

Summary, continued

Use of the Michigan Behavioral Risk Factor Survey

MiBRFS data continue to be used in planning and evaluating programs, establishing program priorities, developing specific interventions and policies, assessing trends, shaping legislation, addressing emerging public health issues, and targeting relevant populations. Notable examples include:

- MiBRFS estimates on the high prevalence of co-morbidity (arthritis, diabetes, hypertension, and CVD) are used by the Arthritis Program to promote expansion of chronic disease self-management programs to address multiple diseases and common risk factors simultaneously.
- MiBRFS data are used by the Diabetes Prevention and Control Program to determine population-based estimates for key clinical indicators of diabetes management in order to set priorities and identify disparities. About one-half of all diabetes data requests received by MDCH are honored by using MiBRFS data. The MiBRFS is the *only source of estimates* for required annual CDC reporting of clinical indicators.
- MiBRFS data compose 11 of 42 indicators for the Health Policy, Regulation and Professions Administration's *Michigan Critical Health Indicators Report,*[1] which supports policy making and program planning by stressing the use of outcome indicators to measure improvement.
- A wide variety of MiBRFS data (screening rates for breast, cervical, colorectal, and prostate cancers, and adult smoking rates) are used to *benchmark progress* towards the 10 Michigan Cancer Consortium priority objectives.[2] MiBRFS data are used by the Cancer program to assess time trends in cancer screening and adult smoking rates back to the 1990s in order *to evaluate cancer programs*.
- Regional and local tobacco use information calculated through the MiBRFS is used to educate elected officials on the dangers of tobacco use and secondhand smoke exposure among their constituents, promoting the need for smoke-free legislation, demonstrating program impact and the great need for maintaining financial support.
- The MiBRFS provides opportunity to add questions on *emerging issues*. For example, public beliefs about the family health history and awareness of genetic testing were assessed for the first time in Michigan using MiBRFS data. MiBRFS questions on status of ovarian cancer risk assessment and prevalence of hereditary pre-disposition to the cancer are currently being considered to aid in further *program planning*.
- MiBRFS data is used to illustrate that African Americans have the highest rates of obesity and high blood pressure, which are risk factors for many of the chronic diseases that disproportionately impact this population. These data help to initiate *program planning* and to justify funding community organizations focusing on high blood pressure and obesity reductions in African Americans.

In addition, MiBRFS data are used extensively for external presentations and publications. For example, in the last few years numerous posters have been presented at state and national conferences on subjects such as Major Depression, Fast Food Consumption, Knowledge of Stroke and Heart Attack Risk Factors and Warning Signs, Colorectal Cancer Family History, Binge Drinking, and the Michigan Asthma Call-Back Survey. In addition, MiBRFS data have been used in nearly 20 articles by Michigan staff and researchers, including publications on work-related asthma prevalence, chronic disease-related behaviors and health among African Americans and Hispanics, the prevalence of hearing loss and work-related noise induced hearing loss, variations in physical activity and diet, knowledge of stroke risk factors and warning signs, use of folic acid among women of reproductive age, and prevalence of aspirin use to prevent heart disease.

Future of the Michigan Behavioral Risk Factor Survey

The 2008 MiBRFS is expected to yield 1,500 more completed interviews (9,000 total) than the 2007 survey, with an African-American over sample as well. The 2008 questionnaire will include over 120 state-added questions on 16 topics, such as binge drinking, caregiving, newborn screening, childhood asthma, and various tobacco-related issues.

The surveillance system continues to adapt to challenges and expand its utility. For example, the random-digit dialing methodology of the MiBRFS is becoming increasingly problematic because of declining participation rates and the increased use of cell phones and other communication modalities, rather than a traditional land line telephone.[3] The MiBRFS will need to adapt in order to continue providing representative estimates for adults. In 2008, Michigan is participating in the BRFSS cell phone pilot project which will increase the capacity of the survey to include cell-phone-only households which in turn should reach more of the younger, urban respondents that tend to be underrepresented in the current land line survey.

Summary, continued

Efforts have been made to expand the range of subpopulations covered by the MiBRFS data:

- The 2007 survey methodology over samples geographic areas with a high density of African-American residents in order to provide more precise estimates for this population. Similar methodology could be used to increase the participation of Hispanic adults in the survey in the future.
- Since 2005, questions have been included that randomly select one child in each household and obtain demographic characteristics of that child. This information allows us to ask health-related questions about this child and then to calculate estimates for childhood conditions, such as asthma.
- An Asthma Call-Back survey that follows up on children and adults who were identified as having asthma during the BRFS interview has been conducted since 2005, allowing for collection of more detailed information on asthma management, clinical care, and impact of the disease on people's lives. It is anticipated that this methodology could be useful for other diseases and conditions in the future. The CDC has provided funding to some states to conduct in-person, follow-back surveys on specific diseases of interest. The MiBRFS has the potential to be used as a launching point for health examination surveys of adults identified as having risk factors for cardiovascular diseases or diabetes. In-person interviews and testing could provide more information about undiagnosed disease and the accuracy of self-reported data.

In conclusion, the MiBRFS continues to serve the needs of public health officials, health care providers, researchers and local and state level policy makers, while presenting a number of opportunities for expanding our understanding of the risk factors and preventive behaviors for the major causes of disease and disability in Michigan.

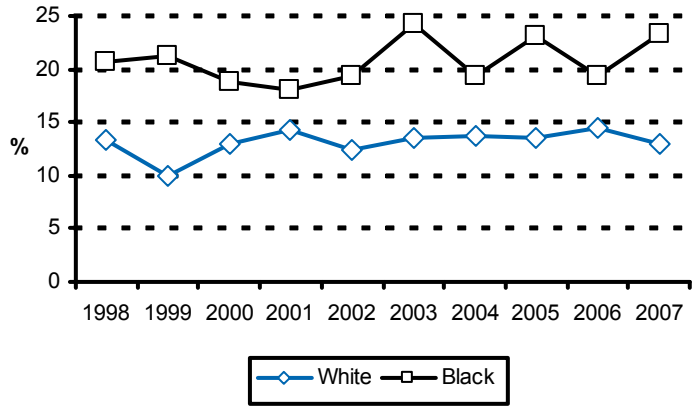
General Health Status

2007 MiBRFS

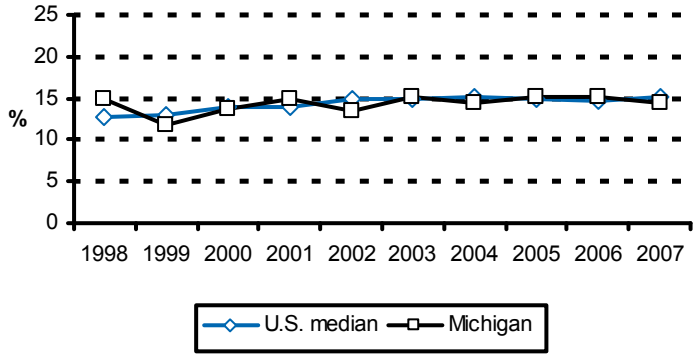
General health status is a reliable self-rated assessment of one's perceived health, which may be influenced by all aspects of life, including behaviors, environmental factors, and community.[4] Self-rated general health status is useful in determining unmet health needs, identifying disparities among subpopulations, and characterizing the burden of chronic diseases within a population.[5] The prevalence of self-rated fair or poor health status has been found to be statistically higher within older age groups, females, and minorities, and has also been associated with lower socioeconomic status in the presence or absence of disease.[5]

In 2007, an estimated 14.8% of Michigan adults perceived that their general health was either fair or poor. This proportion increased with age from 8.3% of those aged 18-24 years to 31.2% of those aged 75 years and older. The proportion who reported fair or poor health decreased with increasing education and income levels. Blacks in Michigan have consistently had a higher prevalence of fair or poor general health than Whites.

General Health, Fair or Poor by Race
Michigan 1998-2007



General Health, Fair or Poor
U.S. vs. Michigan, 1998-2007



Demographic Characteristics	General Health Fair or Poor [a] %	95% Confidence Interval
Total	**14.8**	**(13.8 - 15.8)**
Age		
18 - 24	8.3	(5.2 - 13.1)
25 - 34	8.5	(6.3 - 11.3)
35 - 44	11.2	(9.1 - 13.5)
45 - 54	13.6	(11.7 - 15.7)
55 - 64	19.5	(17.4 - 21.8)
65 - 74	23.0	(20.2 - 26.0)
75 +	31.2	(28.1 - 34.4)
Gender		
Male	14.3	(12.7 - 16.1)
Female	15.2	(14.1 - 16.5)
Race/Ethnicity		
White non-Hispanic	13.0	(12.0 - 14.0)
Black non-Hispanic	23.4	(20.2 - 27.0)
Other non-Hispanic	17.3	(13.2 - 22.4)
Hispanic	16.4	(7.9 - 30.9)
Education		
< High school	26.9	(22.4 - 31.8)
High school grad	19.7	(17.7 - 22.0)
Some college	14.6	(12.9 - 16.5)
College grad	6.9	(5.8 - 8.3)
Household Income		
< $20,000	30.6	(27.2 - 34.2)
$20,000 - $34,999	21.7	(18.7 - 25.0)
$35,000 - $49,999	13.1	(10.7 - 15.8)
$50,000 - $74,999	7.9	(6.2 - 10.1)
≥ $75,000	5.5	(4.4 - 6.9)

[a] The proportion who reported that their health, in general, was either fair or poor.

Over the past 10 years, the proportion of Michigan adults who reported fair or poor health has been relatively constant and similar to the U.S. median.

In addition, the prevalence of fair or poor health was higher among adults who were not currently married compared with those who were married (age-adjusted estimates: 20.8% [19.0-22.8] vs. 11.5% [10.0-13.2]).

Quality of Life

2007 MiBRFS

The concept of health-related quality of life refers to a person's or group's perceived physical and mental health over time. Tracking health-related quality of life within different populations can help guide interventions to improve the overall health of the community. The literature indicates that younger adults tend to experience a higher number of days of poor mental health than physical health, but the opposite seems to be true for older adults.[6]

An estimated 11.1% of Michigan adults had experienced physical health that was not good during at least two weeks of the past month. This proportion was higher among older adults than younger adults. Women were more likely than men to have experienced physical health that was not good (12.6% vs. 9.5%). This proportion decreased with higher education and income levels.

The proportion of Michigan adults who had mental health that was not good on at least 14 days in the past month was estimated to be 11.0%. This proportion was lower among older age groups, and women were more likely than men (12.8% vs. 9.1%) to report that their mental health was not good. This proportion decreased with higher education and income levels.

The proportion who reported that either poor physical heath or poor mental health kept them from doing their usual activities (such as self-care, work, and recreation) on at least 14 of the past 30 days was 7.1% (6.4-7.9). This proportion was lower among younger age groups, and women were more likely than men (8.3% [7.4-9.3] vs. 5.9% [4.8-7.1]) to report that their activities were limited by poor physical or mental health. This proportion decreased with higher education and income levels.

Demographic Characteristics	Physical Health Not Good [a] %	Physical Health Not Good [a] 95% Confidence Interval	Mental Health Not Good [b] %	Mental Health Not Good [b] 95% Confidence Interval
Total	**11.1**	**(10.3 - 12.1)**	**11.0**	**(10.1 - 12.0)**
Age				
18 - 24	5.4	(3.2 - 8.8)	11.8	(8.4 - 16.3)
25 - 34	8.2	(5.9 - 11.3)	12.8	(10.0 - 16.1)
35 - 44	9.0	(7.2 - 11.3)	13.1	(11.0 - 15.5)
45 - 54	10.9	(9.2 - 12.8)	11.9	(10.2 - 13.9)
55 - 64	14.7	(12.8 - 16.9)	9.2	(7.7 - 10.9)
65 - 74	15.3	(13.0 - 18.0)	7.1	(5.6 - 9.0)
75 +	20.7	(18.0 - 23.7)	5.9	(4.5 - 7.6)
Gender				
Male	9.5	(8.3 - 11.0)	9.1	(7.7 - 10.6)
Female	12.6	(11.5 - 13.8)	12.8	(11.6 - 14.1)
Race/Ethnicity				
White non-Hispanic	10.5	(9.6 - 11.5)	10.7	(9.7 - 11.8)
Black non-Hispanic	13.2	(10.7 - 16.2)	13.2	(10.5 - 16.6)
Other non-Hispanic	14.2	(10.2 - 19.3)	9.9	(6.6 - 14.8)
Hispanic	11.6	(5.6 - 22.4)	9.0	(4.3 - 17.9)
Education				
< High school	20.4	(16.2 - 25.2)	18.4	(14.3 - 23.3)
High school grad	13.8	(12.1 - 15.7)	12.6	(10.8 - 14.6)
Some college	11.4	(9.9 - 13.1)	13.0	(11.2 - 14.9)
College grad	6.2	(5.2 - 7.5)	6.0	(4.9 - 7.2)
Household Income				
< $20,000	23.4	(20.3 - 26.9)	19.7	(16.6 - 23.3)
$20,000 - $34,999	13.9	(11.6 - 16.5)	13.3	(10.9 - 16.1)
$35,000 - $49,999	9.2	(7.2 - 11.7)	11.8	(9.5 - 14.5)
$50,000 - $74,999	7.2	(5.6 - 9.2)	8.7	(6.8 - 11.1)
≥ $75,000	5.5	(4.3 - 7.0)	6.2	(4.9 - 7.8)

[a] The proportion who reported 14 or more days of poor physical health, which includes physical illness and injury, during the past 30 days.
[b] The proportion who reported 14 or more days of poor mental health, which includes stress, depression, and problems with emotions, during the past 30 days.

In 2007, the estimated average number of days per month on which Michigan adults did not have good physical health was 3.6, for mental health the average was 3.7 days, and for limited activities the average was 2.3 days.

Two additional indicators related to quality of life, i.e., life satisfaction and emotional support, are also available. Nearly seven percent (6.6% [5.9-7.4]) of Michigan adults were estimated to be dissatisfied or very dissatisfied with their lives. This indicator decreased with increasing levels of education and income. Approximately six percent (6.4% [5.8-7.2]) reported that they rarely or never get the social and emotional support they need. The prevalence of inadequate social and emotional support was higher for men than women (7.5% [6.4-83.9] vs. 5.4% [4.7-6.2]), and also decreased with increasing levels of education and income.

Disability

2007 MiBRFS

One Healthy People 2010 goal is to "promote the health of people with disabilities, prevent secondary conditions, and eliminate disparities between people with and without disabilities in the U.S. population."[7] There are many ways in which disability can be defined, ranging from experiencing difficulty in participating in certain activities (such as lifting and carrying objects, seeing, hearing, talking, walking or climbing stairs) to having more severe disabilities that require assistance in personal care needs (i.e., bathing) or routine care needs (i.e. housework).[8]

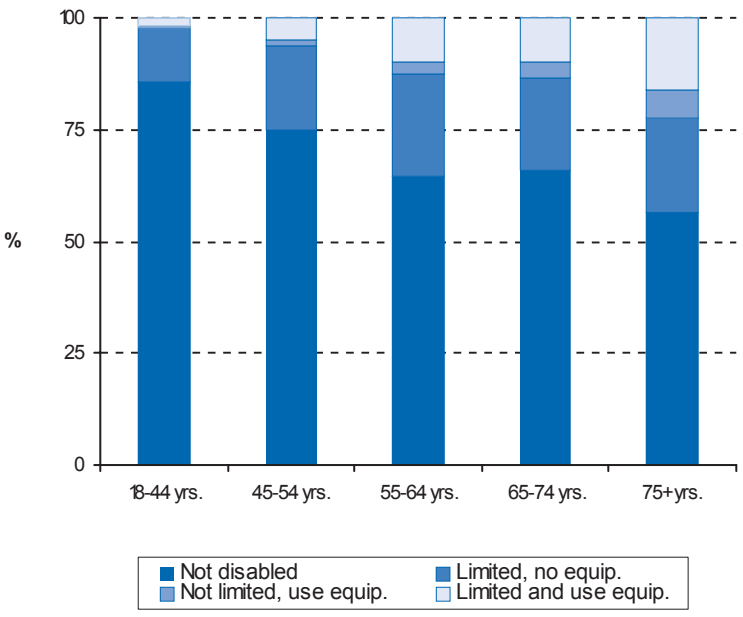
Disability in the MiBRFS is defined as either being limited in any activities because of physical, mental, or emotional problems, or having any health problems that required the use of special equipment (such as a cane, a wheelchair, a special bed, or a special telephone). The estimated proportion of Michigan adults who were limited in any activities was 21.1% (20.0-22.3) and the proportion who used special equipment due to a health problem was 7.2% (6.6-7.9).

Combining responses to the two questions, an estimated 22.7% of Michigan adults were living with a disability in 2007, compared with 19.5% (18.1-20.9) in 2001. In 2007, the proportion who had a disability increased with age from 13.7% of those aged 18-24 years to 42.8% of those aged 75 years or older. The proportion of adults who had a disability declined with higher education and income levels.

Demographic Characteristics	Total Disability [a] %	95% Confidence Interval
Total	**22.7**	**(21.5 - 23.9)**
Age		
18 - 24	13.7	(9.8 - 18.8)
25 - 34	12.6	(9.8 - 16.1)
35 - 44	15.0	(12.8 - 17.6)
45 - 54	22.6	(20.3 - 25.1)
55 - 64	32.5	(29.9 - 35.2)
65 - 74	36.9	(33.6 - 40.3)
75 +	42.8	(39.4 - 46.2)
Gender		
Male	21.4	(19.6 - 23.4)
Female	23.9	(22.5 - 25.4)
Race/Ethnicity		
White non-Hispanic	22.2	(20.9 - 23.5)
Black non-Hispanic	24.7	(21.5 - 28.3)
Other non-Hispanic	23.9	(19.0 - 29.5)
Hispanic	20.8	(12.8 - 32.1)
Education		
< High school	34.3	(29.0 - 40.1)
High school grad	26.0	(23.7 - 28.4)
Some college	23.5	(21.4 - 25.7)
College grad	16.0	(14.3 - 17.8)
Household Income		
< $20,000	41.8	(37.7 - 45.9)
$20,000 - $34,999	28.3	(25.3 - 31.6)
$35,000 - $49,999	21.8	(18.7 - 25.2)
$50,000 - $74,999	17.0	(14.5 - 19.7)
≥ $75,000	12.9	(11.0 - 15.0)

[a] The proportion who reported being limited in any activities because of physical, mental, or emotional problems, or reported that they required use of special equipment (such as a cane, a wheelchair, a special bed, or a special telephone) due to a health problem.

Disability by Age Group and Severity
Michigan, 2007



When investigating disability by age group and severity, individuals aged 75 years and older reported more severe disability (i.e. activities limited and use of special equipment) when compared to all other age groups.

In 2007, Michigan adults with a disability were nearly 9 times as likely to have reported 14 or more days of physical health that was not good (35.8% [33.0-38.7] vs. 4.1% [3.5-4.8]), over 3 times as likely to have reported that their mental health was not good (23.9% [21.4-26.6] vs. 7.2% [6.3-8.2]), and over 12 times as likely to have reported activity limitations (25.1% [22.6-27.7] vs. 2.0% [1.5-2.5]) when compared to individuals without disabilities.

Weight Status

2007 MiBRFS

Obesity increases the risk of many diseases and health conditions, such as high blood pressure, diabetes, coronary heart disease, stroke, gallbladder disease, high cholesterol, and some forms of cancer.[9] Obesity-related medical expenditures in Michigan were estimated to be $2.9 billion in 2003 dollars.[10] Overweight is defined as having a body mass index (BMI) between 25.0 and 29.9; an obese weight status is a BMI greater than or equal to 30.0. BMI is defined as weight in kilograms divided by height in meters squared (w/h^2) and was calculated from the self-reported height and weight measurements of Michigan residents participating in the 2007 BRFS.

An estimated 28.4% of Michigan adults were obese in 2007, compared with 25.5% (24.0-26.9) in 2004. The proportion of adults who were obese in 2007 increased with age from 15.6% of those aged 18-24 years to 38.4% of those aged 55-64 years, and then decreased to 19.5% of those aged 75 years and older. Blacks were more likely than Whites (37.4% vs. 26.8%) to be obese.

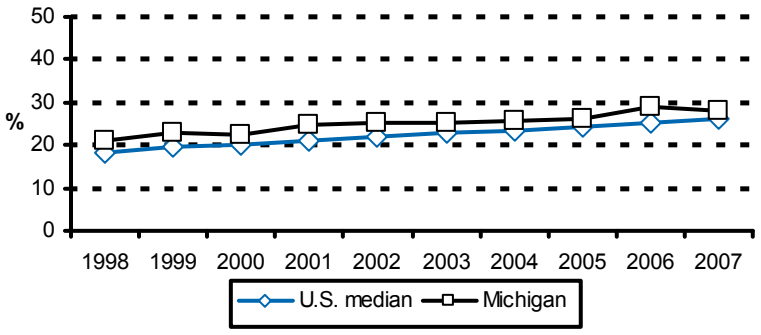
In 2007, an estimated 36.2% (34.7-37.7) of Michigan adults were overweight, having a BMI between 25.0 and 29.9. This proportion increased with age from 23.5% (18.5-29.3) of those aged 18-24 years to 41.8% (38.4-45.2) of those aged 75 years and older. Men were more likely than women (41.5% [39.1-44.0] vs. 30.9% [29.1-32.7]) to be overweight. The cumulative proportion of obese and overweight Michigan adults was 64.6% (63.1-66.1).

Michigan has consistently had higher obesity prevalence rates than the U.S. median. In 2007, the State of Michigan was tied for the thirteenth highest obesity level among all participating states and territories.

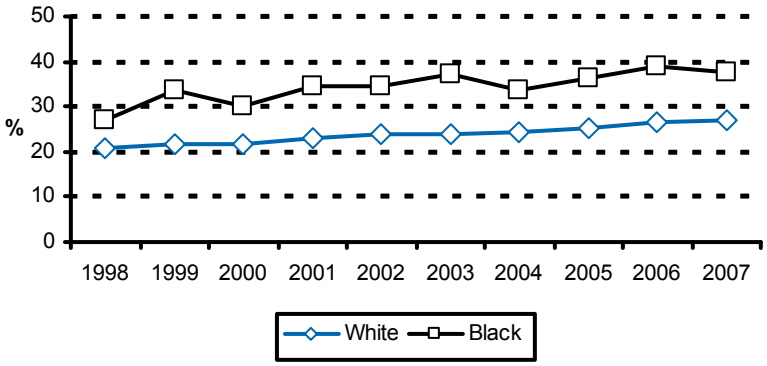
Demographic Characteristics	Obese [a] %	Obese [a] 95% Confidence Interval
Total	**28.4**	**(27.1 - 29.9)**
Age		
18 - 24	15.6	(11.0 - 21.8)
25 - 34	30.4	(26.1 - 35.1)
35 - 44	27.7	(24.6 - 31.1)
45 - 54	30.4	(27.8 - 33.1)
55 - 64	38.4	(35.6 - 41.2)
65 - 74	34.2	(31.0 - 37.6)
75 +	19.5	(17.0 - 22.2)
Gender		
Male	29.1	(26.8 - 31.4)
Female	27.8	(26.2 - 29.5)
Race/Ethnicity		
White non-Hispanic	26.8	(25.4 - 28.4)
Black non-Hispanic	37.4	(33.3 - 41.7)
Other non-Hispanic	25.8	(20.3 - 32.1)
Hispanic	38.1	(25.0 - 53.3)
Education		
< High school	23.9	(19.5 - 29.0)
High school grad	31.9	(29.3 - 34.7)
Some college	32.1	(29.4 - 34.8)
College grad	22.7	(20.6 - 25.0)
Household Income		
< $20,000	31.8	(28.1 - 35.7)
$20,000 - $34,999	32.1	(28.6 - 35.7)
$35,000 - $49,999	32.6	(28.9 - 36.6)
$50,000 - $74,999	29.6	(26.4 - 33.1)
≥ $75,000	24.3	(21.8 - 27.1)

Note: BMI, body mass index, is defined as weight (in kilograms) divided by height (in meters) squared [weight in kg/(height in meters)^2]. Weight and height were self-reported. Pregnant women were excluded.
[a] The proportion of respondents whose BMI was greater than or equal to 30.0.

Obesity
U.S. vs. Michigan, 1998-2007



Obesity by Race
Michigan, 1998-2007



No Health Care Coverage

2007 MiBRFS

Adults who do not have health care coverage are less likely to access health care services and delay getting needed medical attention.[11] Utilization of preventive health care services, such as mammography, pap tests, prostate exams, adult vaccinations, and cholesterol tests, could reduce the prevalence and severity of diseases and chronic conditions in the United States.[12]

In 2007, an estimated 14.4% of Michigan adults aged 18-64 years had no health care coverage. This proportion decreased with age from 24.7% of those aged 18-24 years to 7.4% of those aged 55-64 years. Blacks (18.7%) had higher rates of non-coverage than Whites (13.7%). The proportion who were uninsured decreased with education and income levels.

The highest non-coverage rates were found among younger persons, those with less education, and those in low-income households. When lack of health insurance was examined more closely among those aged 18-29 years, it was found that 22.7% (18.9-27.1) of this age group were without health insurance and that the same inverse relationships existed with education and household income. The proportion with no health insurance decreased from 30.7% (18.7-46.0) among 18-29-year-olds with less than a high school degree to 9.9% (5.3-17.8) among college graduates in this age group. Similarly, 50.7% (38.8-62.6) of 18-29-year-olds living in households with incomes of less than $20,000 had no health insurance while only 10.5% (5.0-20.7) of those in the highest income group (≥ $75,000) had no health insurance.

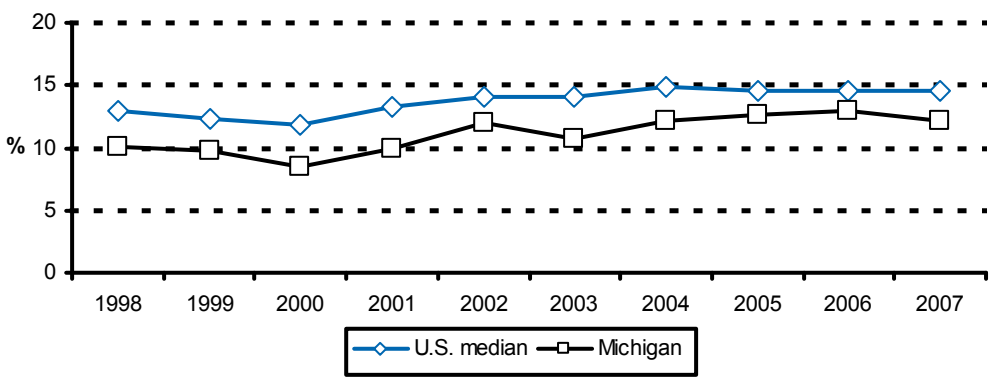
U.S. adults without health insurance are more likely than those with insurance to have more health risk factors, such as current cigarette smoking and lack of physical activity.[13] In Michigan, among those aged 18-64 years who did not have health insurance, the proportion who were current smokers was 44.8% (39.6-50.0) in 2007, whereas among insured adults in the same age range, an estimated 20.5% (19.0-22.2) were current smokers. No differences in physical activity were observed by insurance status.

Over the past 10 years, the proportion of Michigan adults who reported having no health care coverage has been relatively constant and slightly lower than that of the U.S. median.

Demographic Characteristics	No Health Care Coverage Among Adults Aged 18-64 Years [a] %	95% Confidence Interval
Total	**14.4**	**(13.1 - 15.8)**
Age		
18 - 24	24.7	(19.5 - 30.6)
25 - 34	19.1	(15.6 - 23.2)
35 - 44	12.8	(10.7 - 15.3)
45 - 54	10.6	(9.0 - 12.5)
55 - 64	7.4	(6.1 - 9.0)
Gender		
Male	15.5	(13.5 - 17.8)
Female	13.3	(11.7 - 15.0)
Race/Ethnicity		
White non-Hispanic	13.7	(12.2 - 15.3)
Black non-Hispanic	18.7	(15.1 - 22.9)
Other non-Hispanic	15.8	(10.6 - 22.9)
Hispanic	11.3	(5.6 - 21.4)
Education		
< High school	30.4	(23.1 - 38.8)
High school grad	20.5	(17.8 - 23.5)
Some college	14.2	(11.9 - 16.8)
College grad	6.1	(4.8 - 7.8)
Household Income		
< $20,000	37.8	(32.5 - 43.4)
$20,000 - $34,999	25.3	(21.4 - 29.7)
$35,000 - $49,999	13.8	(10.7 - 17.6)
$50,000 - $74,999	6.1	(4.3 - 8.6)
≥ $75,000	3.7	(2.5 - 5.5)

[a] Among those aged 18-64, the proportion who reported having no health care coverage, including health insurance, prepaid plans such as HMOs, or government plans, such as Medicare.

No Health Care Coverage
Among Adults Aged 18 Years and Older
U.S. vs. Michigan, 1998-2007



Limited Health Care Coverage

2007 MiBRFS

Two additional indicators related to health care access are: 1) not having a personal doctor or health care provider and 2) having had a time during the past 12 months when they needed to see a doctor but could not because of the cost. These indicators are very important to health care due to the fact that increases in primary care have been show to improve health-related outcomes substantially.[14]

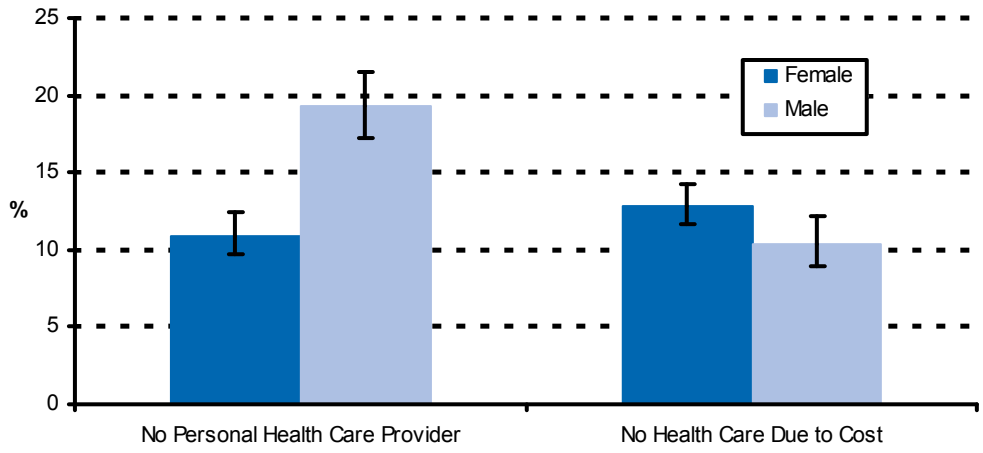
An estimated 15.0% of Michigan adults did not have a personal doctor or health care provider in 2007. The proportion of Michigan adults who needed to see a doctor in the past year but could not due to the cost was estimated to be 11.7%, an increase from 8.6% in 1998. When comparing individuals with and without insurance coverage, uninsured individuals were over four times as likely to not have a personal health care provider and over six times as likely to have needed health care in the past 12 months, but was not able to get it due to cost.

Men were more likely than women to have no personal health care provider (19.3% vs. 10.9%), but equally likely to have no health care access during the past 12 months due to cost (10.4% vs. 12.8%). The proportion for both indicators decreased with increasing education and income levels. When analyzed by race-ethnicity, the proportion of Whites who had no health care access during the past 12 months due to cost was lower than that of Blacks (10.2% vs. 17.3%).

Demographic Characteristics	No Personal Health Care Provider [a] %	No Personal Health Care Provider [a] 95% Confidence Interval	No Health Care Access Due to Cost [b] %	No Health Care Access Due to Cost [b] 95% Confidence Interval
Total	**15.0**	**(13.7 - 16.3)**	**11.7**	**(10.7 - 12.8)**
Age				
18 - 24	30.3	(24.6 - 36.6)	15.2	(11.4 - 20.1)
25 - 34	25.0	(21.1 - 29.5)	18.5	(15.1 - 22.3)
35 - 44	16.1	(13.7 - 18.9)	13.6	(11.2 - 16.5)
45 - 54	11.0	(9.3 - 13.0)	10.7	(9.0 - 12.5)
55 - 64	6.0	(4.8 - 7.4)	9.0	(7.5 - 10.8)
65 - 74	4.7	(3.4 - 6.5)	3.4	(2.3 - 4.9)
75 +	4.9	(3.5 - 6.6)	4.0	(2.9 - 5.6)
Gender				
Male	19.3	(17.2 - 21.5)	10.4	(8.9 - 12.2)
Female	10.9	(9.7 - 12.4)	12.8	(11.6 - 14.2)
Race/Ethnicity				
White non-Hispanic	14.2	(12.9 - 15.7)	10.2	(9.2 - 11.4)
Black non-Hispanic	16.8	(13.8 - 20.2)	17.3	(14.1 - 21.0)
Other non-Hispanic	17.6	(12.1 - 24.9)	17.6	(12.8 - 23.6)
Hispanic	20.6	(10.9 - 35.3)	14.7	(7.2 - 27.7)
Education				
< High school	20.0	(15.0 - 26.2)	17.2	(13.1 - 22.3)
High school grad	17.6	(15.3 - 20.3)	13.4	(11.5 - 15.5)
Some college	14.7	(12.6 - 17.2)	14.3	(12.3 - 16.6)
College grad	11.2	(9.5 - 13.3)	6.1	(4.9 - 7.5)
Household Income				
< $20,000	24.7	(20.8 - 29.1)	26.6	(22.7 - 30.9)
$20,000 - $34,999	20.2	(17.0 - 23.8)	18.3	(15.5 - 21.4)
$35,000 - $49,999	15.1	(12.2 - 18.7)	13.0	(10.1 - 16.4)
$50,000 - $74,999	9.1	(6.9 - 11.8)	6.5	(4.7 - 8.9)
≥ $75,000	8.6	(6.9 - 10.5)	3.1	(2.1 - 4.5)

[a] The proportion who reported that they did not have anyone that they thought of as their personal doctor or health care provider.
[b] The proportion who reported that in the past 12 months, they could not see a doctor when they needed to due to the cost.

Health Care Access Indicators by Gender
Michigan, 2007



2007 MiBRFS

No Leisure-Time Physical Activity

Regular physical activity has been shown to reduce the risk of many diseases including cardiovascular disease, diabetes, colon and breast cancers, and osteoporosis. Keeping physically active also helps to control weight, maintain healthy bones, muscles, and joints, and can relieve symptoms of depression.[15]

In 2007, an estimated 20.9% of Michigan adults did not participate in any leisure-time physical activity (physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise in the past month). This proportion was higher among older adults than younger adults. Women were more likely than men (23.3% vs. 18.3%), and Blacks were more likely than Whites to not participate in leisure-time physical activity. Inactivity during leisure time decreased with higher education and income levels.

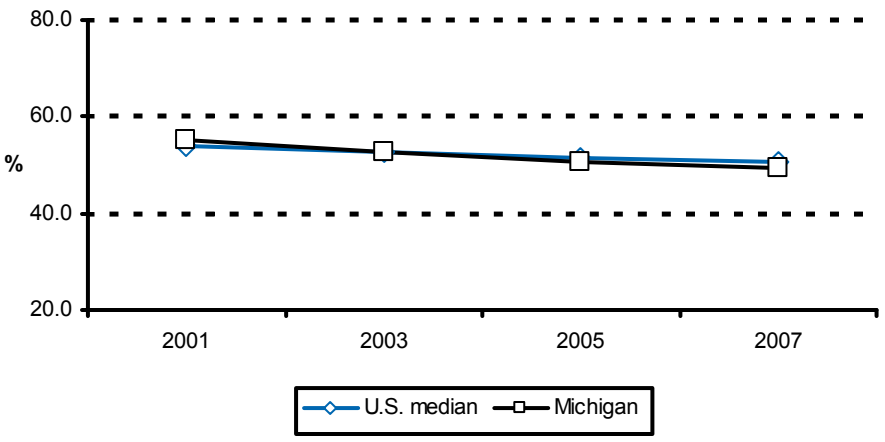
Nearly half (49.4%) of Michigan adults reported inadequate physical activity in 2007 (i.e. no moderate physical activities for a total of at least 30 minutes on 5 or more days per week and no vigorous physical activities for a total of at least 20 minutes on 3 or more days per week while not at work). Inadequate physical activity increased with age of the population, and remained consistent across education and income levels. In addition, Blacks (59.0%) were more likely than Whites (48.1%) to have reported inadequate physical activity.

Since 2001, the median prevalence of inadequate physical activity for the United States has decreased from 54.0% to 50.8% in 2007. In addition, the prevalence of inadequate physical activity within Michigan also decreased significantly over the same time period (2001: 55.2% vs. 2007: 49.4%).

Demographic Characteristics	No Leisure-Time Physical Activity[a] %	No Leisure-Time Physical Activity[a] 95% Confidence Interval	Inadequate Physical Activity[b] %	Inadequate Physical Activity[b] 95% Confidence Interval
Total	**20.9**	**(19.6 - 22.1)**	**49.4**	**(47.9 - 51.0)**
Age				
18 - 24	14.2	(10.1 - 19.7)	39.2	(33.0 - 45.8)
25 - 34	18.0	(14.4 - 22.2)	50.1	(45.3 - 55.0)
35 - 44	18.6	(16.0 - 21.6)	47.0	(43.5 - 50.5)
45 - 54	18.2	(16.2 - 20.4)	48.9	(46.0 - 51.9)
55 - 64	23.3	(21.0 - 25.7)	52.6	(49.7 - 55.5)
65 - 74	28.0	(25.0 - 31.1)	53.0	(49.4 - 56.6)
75 +	35.3	(32.1 - 38.6)	62.0	(58.5 - 65.4)
Gender				
Male	18.3	(16.4 - 20.3)	48.3	(45.8 - 50.9)
Female	23.3	(21.8 - 24.8)	50.5	(48.6 - 52.5)
Race/Ethnicity				
White non-Hispanic	18.5	(17.4 - 19.8)	48.1	(46.4 - 49.9)
Black non-Hispanic	29.8	(25.8 - 34.1)	59.0	(54.3 - 63.4)
Other non-Hispanic	25.4	(19.7 - 32.0)	54.8	(47.4 - 62.1)
Hispanic	30.7	(19.1 - 45.6)	33.4	(23.1 - 45.6)
Education				
< High school	35.5	(30.2 - 41.2)	51.1	(44.5 - 57.7)
High school grad	27.0	(24.6 - 29.5)	51.5	(48.6 - 54.4)
Some college	19.5	(17.4 - 21.8)	50.4	(47.4 - 53.4)
College grad	12.5	(10.8 - 14.4)	46.3	(43.7 - 49.0)
Household Income				
< $20,000	34.9	(31.1 - 39.0)	56.6	(52.1 - 61.0)
$20,000 - $34,999	24.8	(21.7 - 28.3)	53.4	(49.6 - 57.2)
$35,000 - $49,999	23.8	(20.4 - 27.7)	52.1	(47.9 - 56.2)
$50,000 - $74,999	13.9	(11.5 - 16.8)	45.6	(41.9 - 49.4)
≥ $75,000	10.9	(9.2 - 12.9)	43.8	(40.7 - 46.9)

[a] The proportion who reported not participating in any leisure-time physical activities or exercises, such as running, calisthenics, golf, gardening, or walking, during the past month.
[b] The proportion who reported that they do not usually do moderate physical activities for a total of at least 30 minutes on five or more days per week or vigorous physical activities for a total of at least 20 minutes on three or more days per week while not at work.

Inadequate Physical Activity
U.S. vs. Michigan, 2001-2007



Inadequate Fruit and Vegetable Consumption

2007 MiBRFS

Research shows that fruits and vegetables are important promoters of good health. When compared with people whose diets are low in fruits and vegetables, those who eat more generous amounts of fruits and vegetables have a reduced risk of some chronic diseases, such as stroke and certain forms of cancer.[16]

An estimated 78.7% of Michigan adults in 2007 did not consume fruits (including juice) and vegetables five or more times per day. Men were more likely than women to not consume fruits and vegetables the recommended number of times per day (83.6% vs. 74.3%). This proportion was lower among college graduates (74.2%) compared with other educational levels, and was lower among those aged 75 years and older (71.8%) compared with younger age groups.

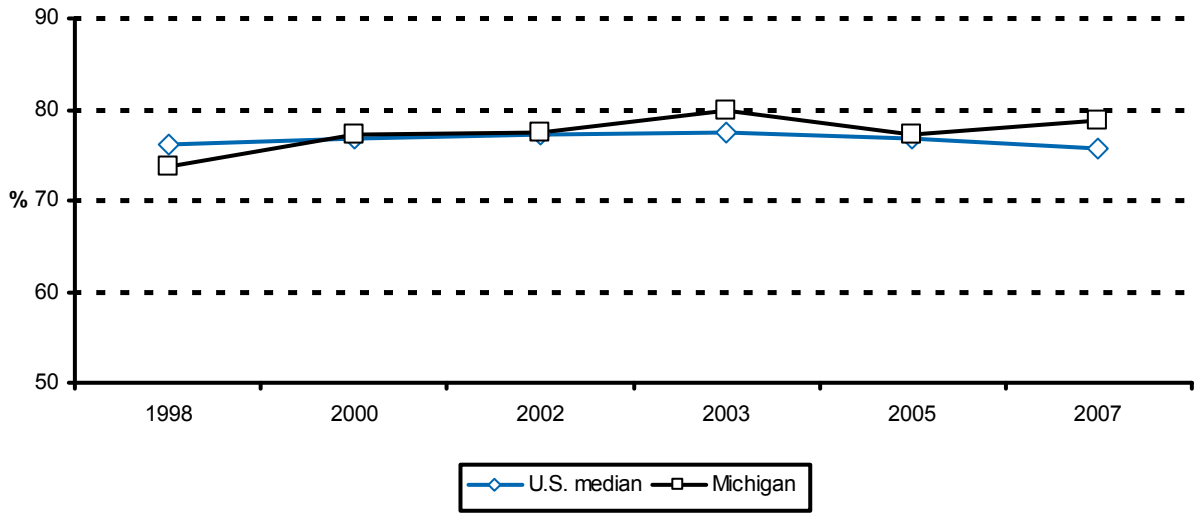
The median number of times per day Michigan adults consumed fruits and vegetables was 3.3 in 2007; the median number for fruits and juice was 1.1 times per day and for vegetables was 1.9 times per day.

The median prevalence of inadequate fruit and vegetable consumption among participating states and U.S. territories has remained relatively consistent over time, but the proportion of Michigan adults who consumed fruits and vegetables less than five times per day has increased significantly from 73.7% (71.7-75.5) in 1998 to 78.7% (77.5-80.0) in 2007.

Demographic Characteristics	Inadequate Fruit and Vegetable Consumption[a] %	95% Confidence Interval
Total	**78.7**	**(77.5 - 80.0)**
Age		
18 - 24	83.2	(77.7 - 87.6)
25 - 34	76.6	(72.4 - 80.4)
35 - 44	82.3	(79.5 - 84.8)
45 - 54	80.1	(77.8 - 82.2)
55 - 64	76.3	(73.8 - 78.5)
65 - 74	76.2	(73.1 - 79.0)
75 +	71.8	(68.7 - 74.8)
Gender		
Male	83.6	(81.6 - 85.4)
Female	74.3	(72.6 - 75.9)
Race/Ethnicity		
White non-Hispanic	79.1	(77.7 - 80.4)
Black non-Hispanic	77.9	(74.1 - 81.3)
Other non-Hispanic	77.9	(71.8 - 83.0)
Hispanic	78.7	(63.8 - 88.5)
Education		
< High school	83.3	(78.4 - 87.3)
High school grad	81.5	(79.2 - 83.6)
Some college	79.4	(77.1 - 81.6)
College grad	74.2	(72.0 - 76.4)
Household Income		
< $20,000	77.7	(74.0 - 81.1)
$20,000 - $34,999	80.2	(77.2 - 83.0)
$35,000 - $49,999	79.5	(76.1 - 82.6)
$50,000 - $74,999	79.1	(76.0 - 81.8)
≥ $75,000	77.2	(74.7 - 79.5)

[a] The proportion whose total reported frequency of consumption of fruits (including juice) and vegetables was less than five times per day.

Inadequate Fruit and Vegetable Consumption
U.S. vs. Michigan, 1998-2007



Cigarette Smoking

2007 MiBRFS

Smoking contributes to the development of many kinds of chronic conditions, including cancers, respiratory diseases, and cardiovascular diseases, and "remains the leading preventable cause of premature death in the United States."[17] It has been estimated that smoking costs the United States $167 billion in annual health-related economic losses and over 5.5 million years of potential life lost each year.[18]

Current smoking status was defined as ever having smoked 100 cigarettes (five packs) in their life and smoking cigarettes now, either every day or on some days, whereas former smoking status was defined as having smoked at least 100 cigarettes but not currently smoking.

In 2007, an estimated 21.1% of Michigan adults were current smokers, and 24.9% (23.7-26.1) were estimated to be former smokers. Men were more likely than women to be current smokers (23.5% vs. 18.9%), and former smokers (27.2% [25.3-29.3] vs. 22.7% [21.4-24.1]), while women were more likely to have never smoked (58.4% [56.5-60.2] vs. 49.3% [46.8-51.8]). Current smoking prevalence was similar in Blacks and Whites, and declined with increasing levels of education and income.

The proportion of Michigan adults who were current smokers has remained above the U.S. median during the past ten years. To achieve the Healthy People goal of a cigarette smoking prevalence of 12% by 2010[19], the proportion of current smokers in Michigan will need to drop by over three percentage points each year.

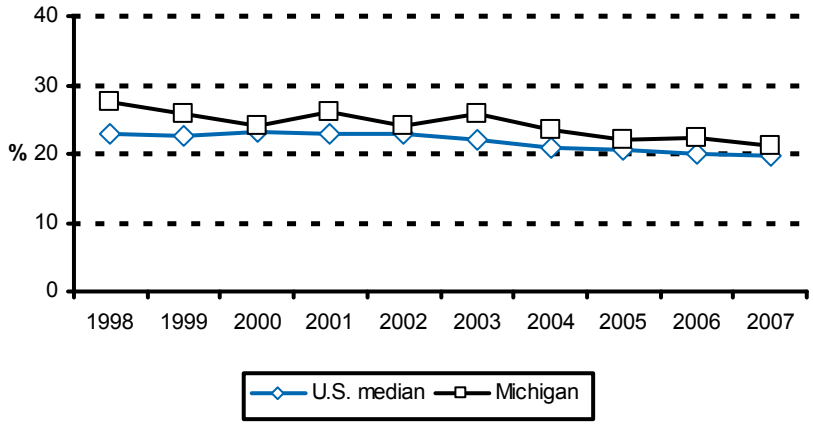
An estimated 61.6% (58.0-65.0) of current smokers in Michigan tried to quit smoking for one day or longer in the past year.

Research has shown a potential relationship between self-rated health status and current smoking status.[20] In Michigan, those who reported fair to poor general health were more likely to be current smokers than those who reported good to excellent general health (26.6% [23.4-30.1] vs. 20.2% [18.7-21.7]).

Demographic Characteristics	Current Smoking [a] %	95% Confidence Interval
Total	**21.1**	**(19.8 - 22.5)**
Age		
18 - 24	29.1	(23.5 - 35.5)
25 - 34	28.5	(24.4 - 33.0)
35 - 44	23.0	(20.2 - 26.1)
45 - 54	22.6	(20.3 - 25.2)
55 - 64	16.8	(14.8 - 19.1)
65 - 74	11.3	(9.2 - 13.8)
75 +	5.0	(3.7 - 6.6)
Gender		
Male	23.5	(21.3 - 25.8)
Female	18.9	(17.4 - 20.5)
Race/Ethnicity		
White non-Hispanic	21.5	(20.0 - 23.0)
Black non-Hispanic	20.0	(16.6 - 23.9)
Other non-Hispanic	17.7	(13.1 - 23.5)
Hispanic	24.5	(14.0 - 39.1)
Education		
< High school	34.4	(28.6 - 40.8)
High school grad	29.5	(26.8 - 32.3)
Some college	21.4	(19.1 - 23.9)
College grad	9.2	(7.7 - 11.0)
Household Income		
< $20,000	33.7	(29.7 - 38.0)
$20,000 - $34,999	28.0	(24.5 - 31.7)
$35,000 - $49,999	23.6	(20.2 - 27.4)
$50,000 - $74,999	17.6	(14.8 - 20.7)
≥ $75,000	13.2	(11.1 - 15.6)

[a] The proportion who reported that they had ever smoked at least 100 cigarettes (5 packs) in their life and that they smoke cigarettes now, either every day or on some days.

Current Cigarette Smoking
U.S. vs. Michigan, 1998-2007



Alcohol Consumption

2007 MiBRFS

Alcohol abuse has been associated with serious health problems, such as cirrhosis of the liver, high blood pressure, stroke, and some types of cancer, and can increase the risk for motor vehicle accidents, injuries, violence, and suicide.[21] In Michigan, the percent of fatal motor vehicle crashes that involved any alcohol was 40.0% in 2006.[22]

In 2007, 18.4% of Michigan adults were estimated to have engaged in binge drinking, i.e., the consumption of five or more drinks per occasion (for men) or four or more drinks per occasion (for women) at least once in the previous month. The proportion for binge drinking decreased with age from 31.5% of those aged 18-24 years to 2.0% of those aged 75 years and older. Men were more likely than women (24.9% vs. 12.5%), and Whites were more likely than Blacks to have engaged in binge drinking.

When compared to the median for all participating states, Michigan has consistently had a higher prevalence of binge drinking. To achieve the Healthy People goal of a binge drinking prevalence of 6% by 2010[23], the proportion in Michigan will need to drop over four percentage points each year.

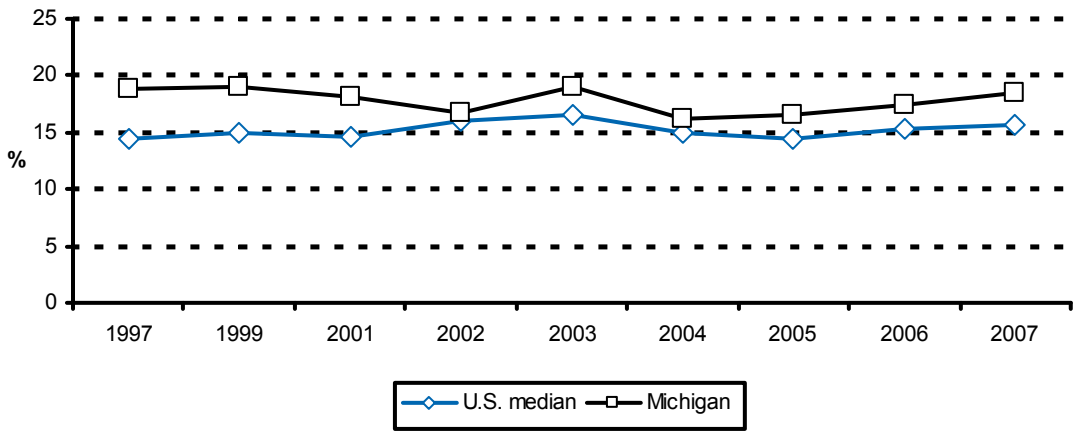
In 2007, the proportion who engaged in heavy drinking, i.e., the consumption of more than two alcoholic beverages per day for men or more than one alcoholic beverage per day for women was 6.1% (5.3-6.9).

Approximately one-fifth of Michigan underage adults, aged 18-20 years, reported binge drinking in the previous month (21.9% [15.1-30.7]). An estimated 9.0% (2.8-10.9) of underage adults reported heavy drinking in 2007.

Demographic Characteristics	Binge Drinking [a] %	95% Confidence Interval
Total	**18.4**	**(17.1 - 19.8)**
Age		
18 - 24	31.5	(25.5 - 38.1)
25 - 34	24.0	(20.1 - 28.4)
35 - 44	24.2	(21.4 - 27.3)
45 - 54	16.7	(14.7 - 19.0)
55 - 64	11.0	(9.2 - 13.0)
65 - 74	8.9	(7.0 - 11.3)
75 +	2.0	(1.2 - 3.1)
Gender		
Male	24.9	(22.6 - 27.2)
Female	12.5	(11.1 - 14.0)
Race/Ethnicity		
White non-Hispanic	19.5	(18.1 - 21.1)
Black non-Hispanic	13.5	(10.3 - 17.4)
Other non-Hispanic	10.6	(6.9 - 16.0)
Hispanic	26.1	(15.4 - 40.6)
Education		
< High school	14.8	(10.6 - 20.2)
High school grad	18.9	(16.5 - 21.6)
Some college	20.5	(18.1 - 23.2)
College grad	16.8	(14.8 - 19.1)
Household Income		
< $20,000	14.5	(11.5 - 18.2)
$20,000 - $34,999	16.8	(13.9 - 20.1)
$35,000 - $49,999	20.6	(17.2 - 24.5)
$50,000 - $74,999	19.5	(16.6 - 22.9)
≥ $75,000	23.4	(20.7 - 26.4)

[a] The proportion who reported consuming five or more drinks per occasion (for men) or four or more drinks per occasion (for women) at least once in the previous month.

Binge Drinking
U.S. vs. Michigan, 1997-2007



2007 MiBRFS

Routine Checkup in Past Year

A yearly routine checkup with a health care professional provides an opportunity to raise awareness regarding adult preventive services, conduct individual risk assessments, promote informed decision-making, and potentially benefit from early detection.[24-25]

In 2007, an estimated 69.5% of Michigan adults had a routine checkup in the past year, a decrease from 73.8% in 1998. This proportion was lowest among those less than 45 years old (36-40%), and then increased to 88.0% of those aged 75 and older. Women were more likely to have had routine checkup in past year compared with men (75.1% vs. 63.4%), as were Blacks compared with Whites (82.0% vs. 67.3%).

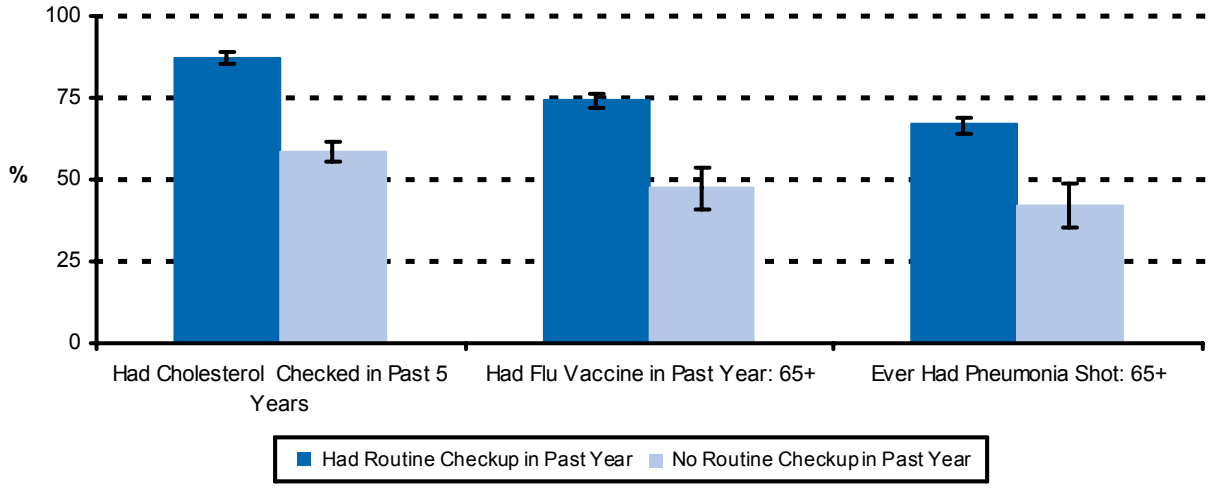
During the routine checkup, the health care professional can suggest appropriate screenings and immunizations. The figure shows the proportion who received appropriate clinical preventive services by routine checkup status. Those who received a routine checkup in the past year were more likely to have had their cholesterol checked in the past five years (87.4% [85.6-88.9] vs. 58.6% [55.4-61.7]), and among those aged 65 years and older to have had a flu vaccine in the past year (74.4% [72.1-76.5] vs. 47.4% [40.9-53.9]), and ever had a pneumonia vaccination (66.8% [64.2-69.2] vs. 41.9% [35.6-48.5]). In addition, individuals who received a routine checkup in the past year were more likely to have a regular health care provider (91.9% [90.6-93.1] vs. 69.7% [66.7-72.5].

Among those who had a routine checkup in the past year, the majority (92.8%) did currently have health care coverage.

Demographic Characteristics	Had Routine Checkup in Past Year[a] %	95% Confidence Interval
Total	**69.5**	**(68.0 - 71.0)**
Age		
18 - 24	63.6	(57.1 - 69.7)
25 - 34	59.6	(54.9 - 64.2)
35 - 44	60.8	(57.3 - 64.1)
45 - 54	70.0	(67.3 - 72.6)
55 - 64	77.1	(74.6 - 79.4)
65 - 74	83.7	(80.9 - 86.1)
75 +	88.0	(85.5 - 90.1)
Gender		
Male	63.4	(61.0 - 65.9)
Female	75.1	(73.3 - 76.8)
Race/Ethnicity		
White non-Hispanic	67.3	(65.6 - 68.9)
Black non-Hispanic	82.0	(78.4 - 85.1)
Other non-Hispanic	66.9	(59.5 - 73.6)
Hispanic	73.1	(61.1 - 82.4)
Education		
< High school	73.9	(68.4 - 78.8)
High school grad	71.1	(68.4 - 73.7)
Some college	67.8	(64.9 - 70.6)
College grad	68.3	(65.6 - 70.8)
Household Income		
< $20,000	67.0	(62.5 - 71.2)
$20,000 - $34,999	68.8	(65.1 - 72.2)
$35,000 - $49,999	67.7	(63.6 - 71.6)
$50,000 - $74,999	67.5	(63.7 - 71.1)
≥ $75,000	71.6	(68.7 - 74.3)

[a] The proportion who reported that they had a routine checkup in the past year.

Health Screenings and Immunizations by Routine Checkup Status Michigan, 2007



Hypertension Awareness And Medication Use

2007 MiBRFS

Adults with hypertension are at a higher risk for stroke, cardiovascular disease, and end stage renal disease.[26] According to the Seventh Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, hypertension should be diagnosed when the mean systolic blood pressure or the mean diastolic blood pressure is measured in two or more office visits to be greater than or equal to 140 millimeters of mercury (mmHg) or 90 mmHg, respectively.[26] In 2001, an estimated $54.0 billion was spent on health care for patients with hypertension.[27]

Over one quarter of Michigan adults were estimated in 2007 to have ever been told by a health care professional that they had high blood pressure (29.0%). This proportion increased with age from 6.3% of those aged 18-24 years to 60.2% of those aged 65-74 years. Blacks were more likely than the other race-ethnic groups to have ever been told by a health care professional that they had high blood pressure with an estimate of 37.2%. The prevalence of high blood pressure decreased with higher education and income levels.

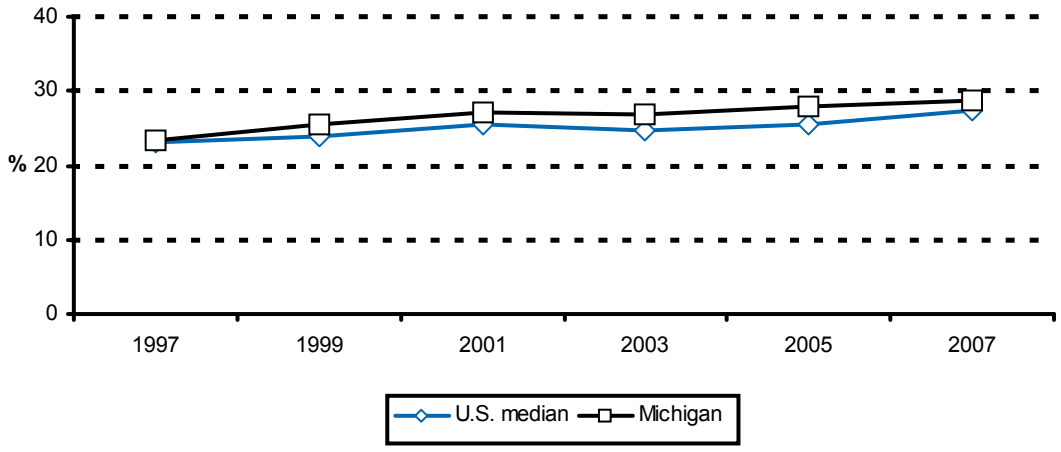
The median prevalence of high blood pressure among participating states and U.S. territories has increased slightly over the past decade. In addition, the prevalence of high blood pressure among Michigan adults has increased significantly from 23.3% (21.5-25.1) in 1997 to 29.0% (27.8-30.3) in 2007.

Among those who had ever been told that they had high blood pressure, an estimated 79.4% (76.9-81.6) were currently taking blood pressure medication in 2007. This proportion increased with age, from 37.7% (25.6-51.5) in the 25-34 years group to 94.1% (91.7-95.9) in the 75 years and older group. Although women and men were equally likely to have ever been told that they had high blood pressure, women were more likely than men to be currently taking blood pressure medication (85.1% [82.7-87.3] vs. 73.8% [69.8-77.5]).

Demographic Characteristics	Ever Told HBP[a] %	95% Confidence Interval
Total	**29.0**	**(27.8 - 30.3)**
Age		
18 - 24	6.3	(3.8 - 10.3)
25 - 34	12.5	(9.7 - 16.1)
35 - 44	17.9	(15.3 - 20.8)
45 - 54	29.3	(26.8 - 32.0)
55 - 64	47.0	(44.2 - 49.8)
65 - 74	60.2	(56.8 - 63.5)
75 +	58.1	(54.7 - 61.4)
Gender		
Male	30.8	(28.7 - 32.9)
Female	27.4	(26.0 - 28.9)
Race/Ethnicity		
White non-Hispanic	28.1	(26.8 - 29.5)
Black non-Hispanic	37.2	(33.3 - 41.3)
Other non-Hispanic	25.0	(19.7 - 31.2)
Hispanic	22.0	(13.2 - 34.2)
Education		
< High school	33.6	(28.8 - 38.8)
High school grad	33.3	(31.0 - 35.8)
Some college	29.8	(27.4 - 32.3)
College grad	22.8	(20.9 - 24.9)
Household Income		
< $20,000	37.3	(33.6 - 41.3)
$20,000 - $34,999	33.8	(30.7 - 37.1)
$35,000 - $49,999	32.6	(29.0 - 36.4)
$50,000 - $74,999	25.4	(22.6 -28.5)
≥ $75,000	21.2	(19.0 - 23.5)

[a] The proportion who reported that they were ever told by a health care professional that they have high blood pressure (HBP). Women who had high blood pressure only during pregnancy and adults who were borderline hypertensive were considered not to have been diagnosed.

Ever Told High Blood Pressure
U.S. vs. Michigan, 1997 - 2007



Cholesterol Screening and Awareness

2007 MiBRFS

High blood cholesterol is a major risk factor for coronary heart disease (CHD), the leading cause of death in the United States. Clinical approaches to preventing CHD include testing adults aged 20 years and older at least once every five years to determine the blood level of low density lipoprotein cholesterol (LDL-C), and more often for those who have multiple risks, such as cigarette smoking, hypertension, family history, and age. Therapeutic lifestyle changes such as a better diet, increased physical activity, and proper weight control have been shown to decrease LDL-C levels in the blood.[28]

In 2007, an estimated 82.5% (80.9-83.9) of Michigan adults had ever had their blood cholesterol checked and 78.5% had it checked within the past five years. Women were more likely than men to have their blood cholesterol checked within the past five years (81.0% vs. 75.8%). This proportion increased with age, education, and income levels.

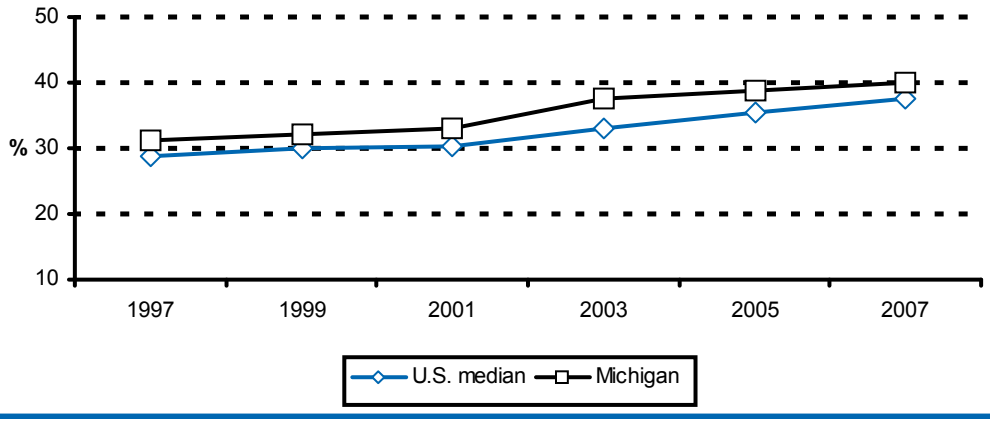
Among Michigan adults who had ever had their cholesterol checked, an estimated 39.9% were ever told by a health care professional that it was high. This proportion increased with age from 9.2% of those aged 18-24 years to 58.7% of those aged 65-74 years, and then decreased to 53.2% of those aged 75 years and older. Even though women were more likely than men to have had their cholesterol checked, men were more likely to have been told it was high (42.8% vs. 37.4%).

The prevalence of high cholesterol among those tested has increased from 33.0% (31.2-34.8) in 2001 to 39.9% in 2007, while the prevalence of having been tested in the past five years has not significantly changed since 2001. In addition, the median prevalence of high cholesterol among participating states and U.S. territories has also increased significantly over the same time period.

	Cholesterol Checked Within Past 5 Years		Told High Cholesterol[a]	
Demographic Characteristics	**%**	**95% CI**	**%**	**95% CI**
Total	**78.5**	**(76.9 - 80.0)**	**39.9**	**(38.4 - 41.4)**
Age				
18 - 24	35.3	(29.2 - 41.8)	9.2	(4.6 - 17.3)
25 - 34	67.5	(62.7 - 71.9)	24.3	(19.9 - 29.4)
35 - 44	78.0	(75.0 - 80.7)	30.9	(27.5 - 34.6)
45 - 54	88.1	(86.1 - 89.9)	39.6	(36.7 - 42.5)
55 - 64	93.7	(92.1 - 94.9)	55.2	(52.3 - 58.1)
65 - 74	96.2	(94.7 - 97.3)	58.7	(55.2 - 62.1)
75 +	95.6	(94.0 - 96.9)	53.2	(49.7 - 56.6)
Gender				
Male	75.8	(73.2 - 78.2)	42.8	(40.3 - 45.3)
Female	81.0	(79.0 - 82.8)	37.4	(35.7 - 39.2)
Race/Ethnicity				
White non-Hispanic	78.2	(76.4 - 79.9)	40.8	(39.2 - 42.5)
Black non-Hispanic	82.9	(78.8 - 86.3)	35.5	(31.2 - 40.0)
Other non-Hispanic	80.7	(73.6 - 86.2)	41.6	(34.4 - 49.1)
Hispanic	64.0	(48.9 - 76.7)	34.9	(23.3 - 48.6)
Education				
< High school	67.5	(60.5 - 73.7)	41.8	(35.9 - 48.0)
High school grad	73.6	(70.5 - 76.6)	44.6	(41.9 - 47.3)
Some college	79.3	(76.4 - 82.0)	40.3	(37.5 - 43.1)
College grad	85.0	(82.6 - 87.1)	35.5	(33.0 - 38.0)
Household Income				
< $20,000	73.6	(68.9 - 77.8)	44.1	(39.8 - 48.5)
$20,000 - $34,999	72.8	(68.6 - 76.7)	43.8	(40.2 - 47.4)
$35,000 - $49,999	76.2	(71.8 - 80.0)	41.5	(37.5 - 45.5)
$50,000 - $74,999	81.5	(78.0 - 84.7)	36.8	(33.3 - 40.5)
≥ $75,000	85.9	(82.9 - 88.4)	36.8	(33.9 - 39.7)

[a] Among all respondents, the proportion who reported that they have had their blood cholesterol checked within the past five years.
[b] Among those who have ever had their blood cholesterol checked, the proportion who reported that a doctor, nurse, or other health professional had told them that their cholesterol was high.

Ever Told High Cholesterol
U.S. vs. Michigan, 1997 - 2007



Oral Cancer Screening

2007 MiBRFS

Oral cancer is newly diagnosed in over 30,000 people annually and results in nearly 8,000 deaths each year within the United States. Survival from this type of cancer is only around 50%, and mortality from this cancer is nearly twice as high for minorities, especially Black males. Preventing high risk behaviors, such as tobacco and alcohol use, and increasing early detection through screening are key in preventing oral cancer, as well as increasing the survival rate for this type of cancer.[29]

Eighty percent (80.4% [78.2-82.4]) of Michigan adults were estimated to have ever heard of oral/mouth cancer, and 37.5% (35.1-39.9) were estimated to have ever heard of an oral/mouth cancer exam.

An estimated 58.3% of Michigan adults reported ever having had an oral/mouth cancer exam. The proportion of adults who ever had an oral/mouth cancer exam increased with age from 51.2% of those aged 18-24 years to 66.8% of those aged 55-64 years, and then decreased to 51.4% of those aged 75 years and older. Whites were more likely than Blacks (60.2% vs. 48.5%) to have ever had a oral/mouth cancer exam. This proportion increased with education and income levels.

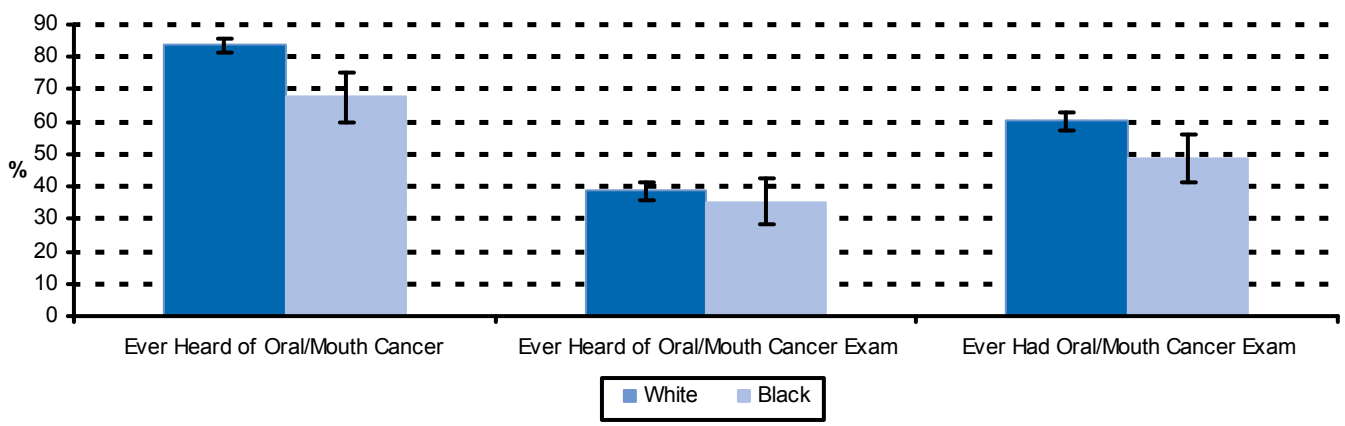
It is important to note that the percentage of Michigan adults who have ever heard of an oral/mouth cancer exam (37.5%) is significantly lower than the percentage who have ever had an oral/mouth cancer exam (58.3%). Nearly half (49.2% [46.0-52.5]) of those who have never heard of an oral/mouth cancer exam have actually received an oral/mouth cancer exam.

When investigating whether or not an individual has ever had an oral/mouth cancer exam by health insurance status, those with some form of health care coverage were more likely than those without health insurance to have ever had an oral/mouth cancer exam (60.3% [57.8-62.9] vs. 45.1% [36.9-53.5]).

Demographic Characteristics	Ever Had Oral/Mouth Cancer Exam[a] %	95% Confidence Interval
Total	**58.3**	**(55.8 - 60.7)**
Age		
18 - 24	51.2	(40.6 - 61.8)
25 - 34	53.0	(45.2 - 60.7)
35 - 44	57.1	(51.6 - 62.4)
45 - 54	64.2	(59.7 - 68.4)
55 - 64	66.8	(62.4 - 71.0)
65 - 74	59.2	(53.8 - 64.4)
75 +	51.4	(45.8 - 56.8)
Gender		
Male	59.3	(55.3 - 63.1)
Female	57.3	(54.2 - 60.4)
Race/Ethnicity		
White non-Hispanic	60.2	(57.4 - 62.9)
Black non-Hispanic	48.5	(41.0 - 56.1)
Other non-Hispanic	47.9	(36.0 - 60.1)
Hispanic	--[b]	
Education		
< High school	51.7	(41.0 - 62.3)
High school grad	49.4	(45.0 - 53.8)
Some college	57.7	(53.1 - 62.1)
College grad	69.1	(64.7 - 73.1)
Household Income		
< $20,000	46.4	(39.5 - 53.5)
$20,000 - $34,999	52.2	(46.7 - 57.7)
$35,000 - $49,999	53.7	(46.7 - 60.5)
$50,000 - $74,999	63.5	(57.4 - 69.2)
≥ $75,000	70.4	(65.4 - 75.0)

[a] The proportion of all respondents who reported ever having an exam in which the doctor or dentist pulled out the tongue, sometimes with gauze wrapped around it, and feels under the tongue and inside the cheeks, or feels the neck.
[b] The denominator in this subgroup was less than 50.

Oral Cancer Screening by Race
Michigan, 2007



Adult Immunizations

2007 MiBRFS

Adult immunizations against influenza and pneumococcal disease are important health indicators that need to be routinely monitored since morbidity and mortality are associated with both of these diseases among different demographic groups.[30-31] Influenza and pneumococcal infections cause an estimated 36,000 and 40,000 deaths each year, respectively. In addition, deaths from pneumococcal infection account for more deaths than any other vaccine-preventable bacterial disease. Approximately half of these deaths could potentially be prevented through the use of the pneumococcal vaccine.[30, 32]

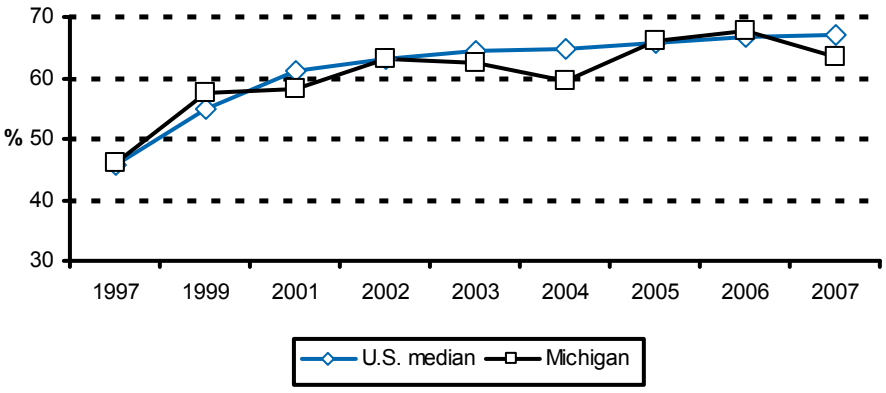
A *Healthy People 2010* objective is to ensure that 90% of adults aged 65 years and older are vaccinated annually against influenza and ever vaccinated against pneumococcal disease.[33] Results from the 2007 BRFS indicate that 70.7% of Michigan adults aged 65 years and older were immunized against influenza in the past year, 63.3% had ever received a pneumococcal vaccination, and 54.8% (52.3-57.2) had received both. Although the prevalence of current flu vaccination has not changed significantly since 1997, the prevalence of ever receiving the pneumonia vaccine has increased nearly 40% (from 45.8% to 63.5%).

Another Healthy People 2010 objective is to increase the vaccination rate to 60% among those aged 18-64 years who have chronic health conditions such as diabetes and asthma.[34] Among those aged 18-64 years in Michigan, an estimated 59.2% (53.4-64.7) of those who had diabetes had an influenza vaccination in the past year compared with 27.4% (25.8-29.0) of those who did not have diabetes. An estimated 48.9% (42.9-55.0) of those who had diabetes had a pneumococcal shot compared to 14.0% (12.7-15.4) of those who did not have diabetes. Those who had current asthma in this age group were also more likely to have had an influenza vaccination than those who did not have asthma (41.0% [35.6-46.6] vs. 28.3% [26.7-29.9]).

Demographic Characteristics	Had Flu Vaccine in Past Year[a] %	Had Flu Vaccine in Past Year[a] 95% Confidence Interval	Ever Had Pneumonia Vaccine[b] %	Ever Had Pneumonia Vaccine[b] 95% Confidence Interval
Total	**70.7**	**(68.4 - 72.8)**	**63.3**	**(60.9 - 65.7)**
Age				
65 - 74	65.2	(61.9 - 68.4)	56.6	(53.1 - 60.1)
75 +	76.2	(73.2 - 78.9)	70.0	(66.8 - 73.1)
Gender				
Male	74.1	(70.5 - 77.5)	60.9	(56.8 - 64.9)
Female	68.2	(65.3 - 70.8)	65.0	(62.1 - 67.8)
Race/Ethnicity				
White non-Hispanic	72.3	(69.9 - 74.6)	64.8	(62.3 - 67.3)
Black non-Hispanic	58.4	(50.7 - 65.7)	49.5	(41.5 - 57.5)
Other non-Hispanic	74.8	(60.9 - 85.0)	70.4	(56.3 - 81.4)
Hispanic	--[c]		--[c]	
Education				
< High school	67.3	(60.8 - 73.1)	61.4	(54.5 - 67.9)
High school grad	69.6	(66.0 - 73.0)	60.9	(57.1 - 64.7)
Some college	68.9	(64.3 - 73.2)	67.1	(62.4 - 71.6)
College grad	76.5	(72.0 - 80.5)	64.9	(59.8 - 69.8)
Household Income				
< $20,000	67.7	(62.4 - 72.5)	64.3	(58.9 - 69.4)
$20,000 - $34,999	68.9	(64.6 - 72.9)	65.9	(61.5 - 70.1)
$35,000 - $49,999	74.4	(68.3 - 79.7)	62.5	(55.4 - 69.0)
$50,000 - $74,999	73.4	(65.9 - 79.8)	57.2	(48.8 - 65.1)
≥ $75,000	74.8	(66.8 - 81.5)	62.9	(54.1 - 70.9)

[a] Among those aged 65 years and older, the proportion who reported that they had a flu vaccine, either by an injection in the arm or sprayed in the nose during the past 12 months.
[b] Among those aged 65 years and older, the proportion who reported that they ever had a pneumococcal vaccine.
[c] The denominator in this subgroup was less than 50.

Ever Had a Pneumococcal Vaccination Among Adults Aged 65 and Older U.S. vs. Michigan, 1997-2007



HIV Testing

2007 MiBRFS

It is estimated that 18,000 people are living with HIV/AIDS in Michigan, 4,500 of whom do not know that they are infected.[34] Early awareness of an HIV infection through HIV testing can prevent further spread of the disease, and an early start on antiretroviral therapy can increase the quality of life among those who are living with HIV/AIDS.[35]

An estimated 38.5% of Michigan adults aged 18-64 years had ever been tested for HIV, apart from blood donations. The prevalence of HIV testing decreased with age from 58.0% among those aged 25-34 years to 19.0% among those aged 55-64 years. Women were more likely than men (41.4% vs. 35.6%) to have ever been tested and Blacks were more likely than Whites.

Since 2000, the lifetime prevalence of HIV testing in Michigan among adults aged 18-64 years has decreased 21.1% (from 48.8% to 38.5%).

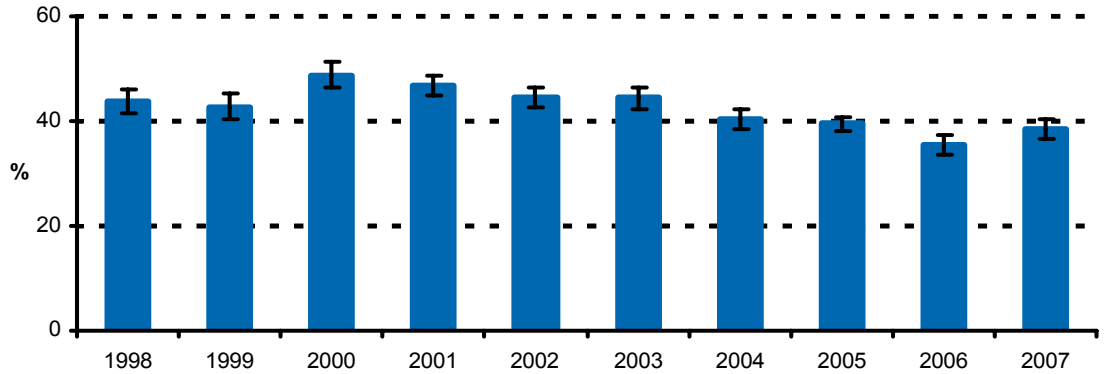
The most frequently reported places where Michigan adults had their last HIV test were at a private doctor or HMO office (43.2% [40.2-46.1]), at a clinic (19.6% [17.1-22.4]), and at a hospital (18.0% [15.8-20.4]).

Rapid HIV antibody tests provide results within a couple of hours. Of those tested for HIV in the past 12 months, 22.0% (17.1-27.9) reported a rapid test was used, 73.4% (67.4-78.7) reported a conventional test was used, and 4.5% (2.7-7.6) did not know.

Demographic Characteristics	Ever Had an HIV Test[a] %	95% Confidence Interval
Total	**38.5**	**(36.7 - 40.3)**
Age		
18 - 24	29.0	(23.5 - 35.2)
25 - 34	58.0	(53.3 - 62.7)
35 - 44	50.4	(46.9 - 53.9)
45 - 54	31.6	(28.9 - 34.3)
55 - 64	19.0	(16.8 - 21.3)
Gender		
Male	35.6	(32.8 - 38.4)
Female	41.4	(39.2 - 43.7)
Race/Ethnicity		
White non-Hispanic	33.7	(31.8 - 35.7)
Black non-Hispanic	62.7	(57.7 - 67.5)
Other non-Hispanic	34.8	(27.8 - 42.6)
Hispanic	56.8	(42.8 - 69.8)
Education		
< High school	38.7	(31.0 - 47.0)
High school grad	34.8	(31.6 - 38.3)
Some college	39.8	(36.6 - 43.1)
College grad	40.5	(37.6 - 43.6)
Household Income		
< $20,000	44.1	(38.8 - 49.6)
$20,000 - $34,999	36.7	(32.0 - 41.6)
$35,000 - $49,999	36.5	(32.0 - 41.2)
$50,000 - $74,999	40.7	(36.6 - 44.9)
≥ $75,000	38.5	(35.4 - 41.8)

[a] Among those aged 18-64 years the proportion who reported that they ever had been tested for HIV, apart from tests that were part of a blood donation.

Ever Tested for HIV
Among Adults Aged 18-64 Years
Michigan, 1998-2007



Asthma in Adults

2007 MiBRFS

Asthma is a chronic inflammatory disorder of the lungs, and is characterized by wheezing, coughing, difficulty breathing, and chest tightness. Asthma attacks can be triggered by a variety of factors, such as cold air, allergens, irritants, and respiratory viral infections. Allergies, a family history of asthma or allergy, low birth weight, and exposure to tobacco smoke are just a few potential risk factors that are associated with the development of asthma.[36-37]

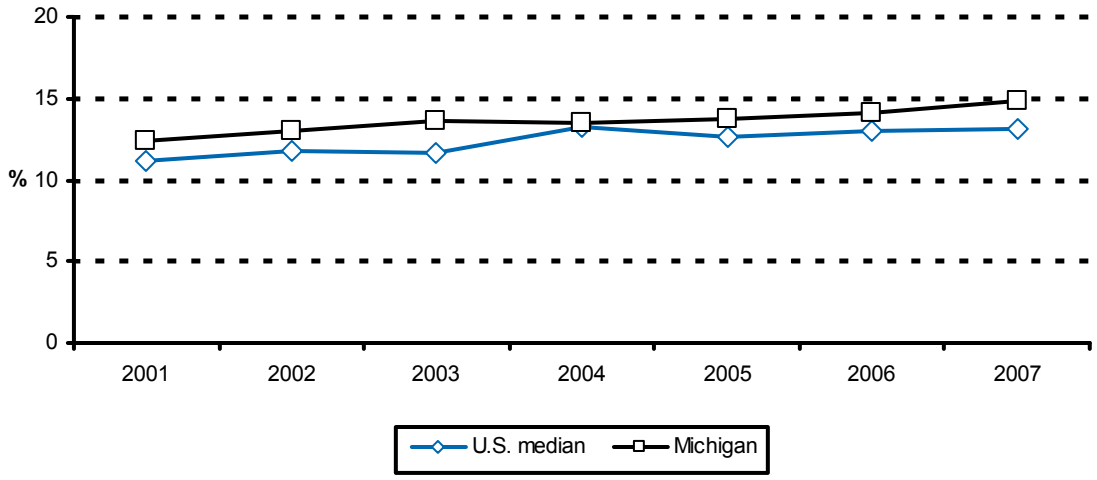
In 2007, the estimated proportion of Michigan adults ever told by a health care professional that they had asthma was 14.7% and an estimated 9.5% of all Michigan adults currently had asthma. Women (11.0%) were more likely than men (7.9%), and Blacks (12.9%) were more likely than Whites (8.7%) to have current asthma. In addition, individuals with household incomes of less than $20,000 (13.2%) were more likely to have current asthma when compared to individuals with household incomes of greater than or equal to $75,000 (7.2%).

Over the past seven years, the proportion of Michigan adults who ever reported having asthma has significantly increased from 12.4% (11.2-13.5) in 2001 to 14.7% (13.6-15.8) in 2007. In addition, the prevalence of lifetime asthma among Michigan adults has been consistently higher than that of the U.S. median.

Demographic Characteristics	Lifetime Asthma[a] %	Lifetime Asthma[a] 95% Confidence Interval	Current Asthma[b] %	Current Asthma[b] 95% Confidence Interval
Total	**14.7**	**(13.6 - 15.8)**	**9.5**	**(8.6 - 10.5)**
Age				
18 - 24	20.4	(15.8 - 25.9)	12.6	(8.9 - 17.4)
25 - 34	18.3	(15.0 - 22.3)	10.2	(7.7 - 13.3)
35 - 44	15.4	(13.0 - 18.1)	10.0	(8.0 - 12.3)
45 - 54	12.4	(10.6 - 14.5)	8.4	(6.9 - 10.2)
55 - 64	13.5	(11.7 - 15.5)	10.0	(8.5 - 11.8)
65 - 74	10.6	(8.7 - 12.9)	8.5	(6.8 - 10.5)
75 +	8.8	(7.1 - 10.8)	5.8	(4.5 - 7.5)
Gender				
Male	13.4	(11.7 - 15.2)	7.9	(6.6 - 9.4)
Female	15.9	(14.5 - 17.4)	11.0	(9.8 - 12.4)
Race/Ethnicity				
White non-Hispanic	13.7	(12.6 - 15.0)	8.7	(7.8 - 9.7)
Black non-Hispanic	18.5	(14.9 - 22.6)	12.9	(10.0 - 16.5)
Other non-Hispanic	15.1	(10.7 - 20.9)	11.1	(7.2 - 16.7)
Hispanic	21.8	(13.6 - 32.9)	14.5	(7.9 - 25.2)
Education				
< High school	18.3	(13.9 - 23.7)	11.7	(8.3 - 16.3)
High school grad	13.4	(11.6 - 15.5)	9.0	(7.5 - 10.7)
Some college	17.2	(15.0 - 19.8)	10.8	(9.1 - 12.9)
College grad	12.6	(11.0 - 14.4)	8.3	(7.0 - 9.9)
Household Income				
< $20,000	19.0	(16.0 - 22.5)	13.2	(10.7 - 16.2)
$20,000 - $34,999	14.0	(11.5 - 17.0)	8.8	(6.8 - 11.3)
$35,000 - $49,999	12.7	(10.2 - 15.5)	8.1	(6.2 - 10.5)
$50,000 - $74,999	15.5	(12.9 - 18.4)	9.5	(7.5 - 12.0)
≥ $75,000	12.5	(10.4 - 14.8)	7.2	(5.8 - 8.9)

[a] The proportion who reported that they were ever told by a doctor, nurse, or other health care professional that they had asthma.
[b] Among all respondents, the proportion who reported that they still had asthma.

Prevalence of Lifetime Asthma Among Adults
U.S. vs. Michigan, 2001 - 2007



Asthma in Children

2007 MiBRFS

Although asthma can affect people of all ages, in most cases it begins during childhood. Children with a family history of asthma and allergy are at higher risk of developing asthma during childhood. In children, more boys develop asthma than girls, which is the exact opposite of what is reported in adults (i.e. more adult females have asthma than adult males).[38]

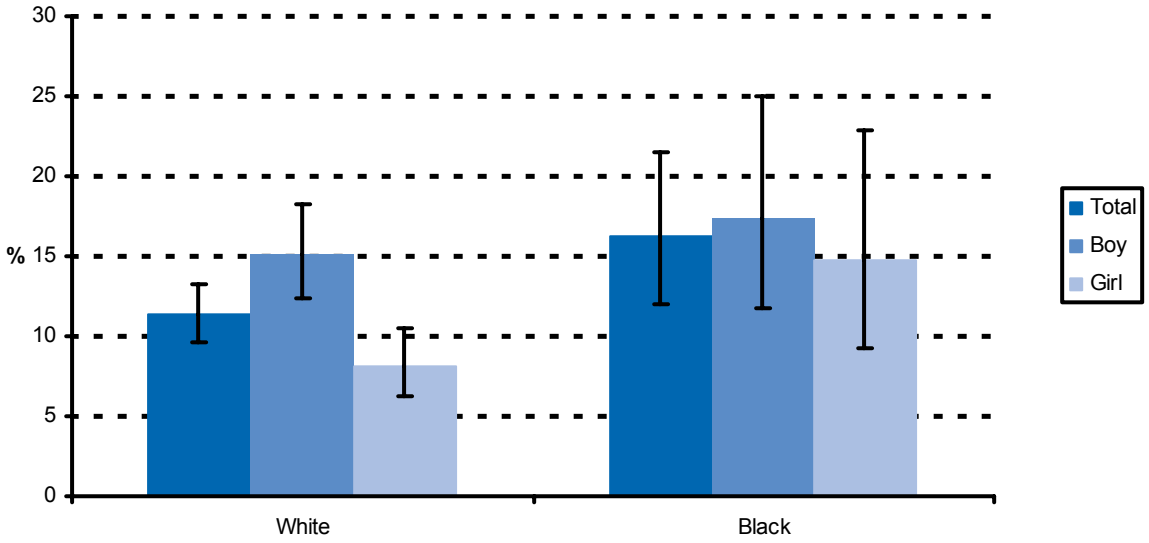
Based on proxy information provided by the adult respondent, the estimated proportion of Michigan children aged 0-17 years who were ever told by a health care professional that they had asthma for 2007 was 13.7% and an estimated 9.5% of these children currently had asthma. Boys were more likely than girls to have ever been told they had asthma (16.7% vs. 10.8%) and were more likely than girls to have current asthma (11.3% vs. 7.7%).

White boys were more likely than White girls to have ever been told they had asthma (15.1% vs. 8.1%), but there was no difference between Black boys and girls.

Demographic Characteristics	Lifetime Asthma[a] %	Lifetime Asthma[a] 95% Confidence Interval	Current Asthma[b] %	Current Asthma[b] 95% Confidence Interval
Total	**13.7**	**(12.0 - 15.6)**	**9.5**	**(8.0 - 11.2)**
Age				
0 - 4	7.9	(4.8 - 12.7)	7.0	(4.0 - 11.8)
5 - 9	14.9	(11.6 - 18.9)	9.8	(7.1 - 13.2)
10 - 14	16.2	(12.8 - 20.2)	10.7	(8.0 - 14.1)
15 - 17	17.2	(13.7 - 21.5)	11.9	(8.8 - 15.8)
Gender				
Male	16.7	(14.2 - 19.5)	11.3	(9.2 - 13.8)
Female	10.8	(8.6 - 13.5)	7.7	(5.8 - 10.2)
Race/Ethnicity				
White non-Hispanic	11.4	(9.7 - 13.4)	8.1	(6.6 - 9.9)
Black non-Hispanic	16.2	(12.0 - 21.5)	11.6	(7.9 - 16.5)
Other non-Hispanic	29.1	(20.0 - 40.2)	16.8	(9.4 - 28.0)
Hispanic	12.7	(6.6 - 23.0)	10.6	(5.0 - 21.0)
Respondent Education				
< High school	16.6	(8.2 - 30.8)	10.5	(3.6 - 26.9)
High school grad	14.8	(11.7 - 18.6)	11.0	(8.4 - 14.5)
Some college	14.5	(11.6 - 18.1)	9.3	(7.0 - 12.4)
College grad	11.8	(9.3 - 14.9)	8.4	(6.3 - 11.2)
Household Income				
< $20,000	18.7	(13.5 - 25.3)	13.3	(9.0 - 19.1)
$20,000 - $34,999	12.4	(8.9 - 17.1)	8.6	(5.7 - 12.8)
$35,000 - $49,999	15.8	(11.3 - 21.7)	9.9	(6.2 - 15.5)
$50,000 - $74,999	12.0	(8.4 - 16.8)	7.1	(4.5 - 11.1)
≥ $75,000	11.9	(9.3 - 15.0)	8.9	(6.7 - 11.8)

[a] Estimated proportion of Michigan children aged 0-17 years ever diagnosed with asthma, using proxy information from adult respondent.
[b] Estimated proportion of Michigan children aged 0-17 years with current asthma.

Prevalence of Lifetime Asthma Among Children by Race and Gender
Michigan, 2007



Arthritis

Arthritis and rheumatism are the leading causes of disability in the United States.[39] In 2003, the total costs attributed to arthritis and rheumatism in Michigan were approximately $5.5 billion.[40] With an aging Michigan population, it is estimated that the number of persons in Michigan with doctor-diagnosed arthritis will increase to over 2.5 million by 2030.[41]

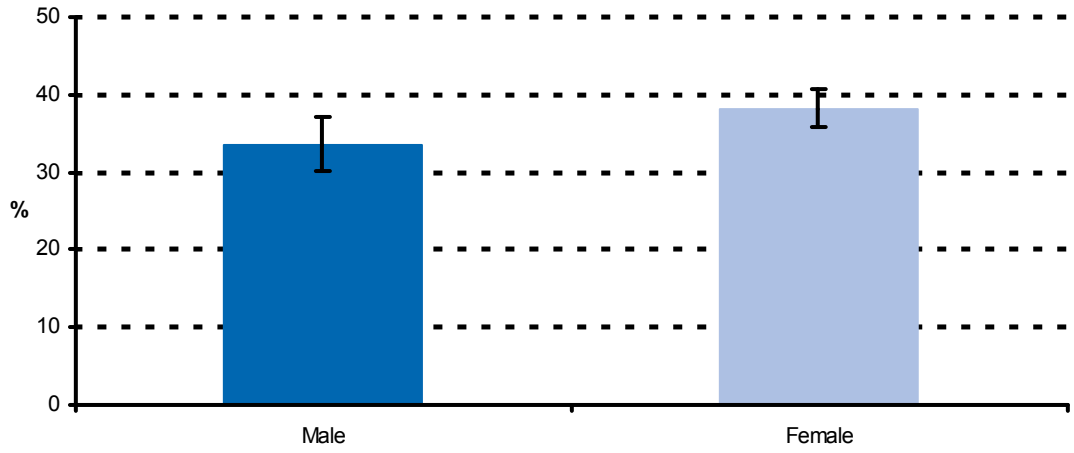
In 2007, an estimated 31.7% of Michigan adults had ever been told by a health care professional that they had some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia. This proportion increased with age from 4.7% of those aged 18-24 years to 63.6% of those aged 75 years and older. Women were more likely than men to be diagnosed with arthritis (34.9% vs. 28.2%). This proportion declined with higher education and income levels. Among the race-ethnic groups, Hispanics had a lower estimate (19.8%) when compared to Whites (32.5%). In addition, 15.3% (14.2-16.5) of Michigan adults were estimated to have chronic joint symptoms but to have not yet been diagnosed with arthritis, gout, lupus, or fibromyalgia by a doctor or other health professional.

Over one-third (36.2% [34.2-38.3]) of those with doctor-diagnosed arthritis reported that they were limited in their usual activities because of arthritis or joint symptoms. The proportion limited by arthritis or joint symptoms decreased with increasing levels of both education and household income. The proportion who were limited by their arthritis was also higher among those who had doctor-diagnosed arthritis compared with those who had chronic joint symptoms but had not been diagnosed (36.2% [34.2-38.3] vs. 16.5% [13.6-19.9]).

Demographic Characteristics	Doctor-Diagnosed Arthritis[a] %	95% Confidence Interval
Total	**31.7**	**(30.4 - 33.0)**
Age		
18 - 24	4.7	(2.7 - 7.9)
25 - 34	12.2	(9.5 - 15.6)
35 - 44	18.6	(16.2 - 21.4)
45 - 54	34.7	(32.0 - 37.4)
55 - 64	53.3	(50.4 - 56.1)
65 - 74	64.0	(60.5 - 67.3)
75 +	63.6	(60.2 - 66.8)
Gender		
Male	28.2	(26.3 - 30.3)
Female	34.9	(33.3 - 36.6)
Race/Ethnicity		
White non-Hispanic	32.5	(31.1 - 34.0)
Black non-Hispanic	28.8	(25.5 - 32.4)
Other non-Hispanic	30.2	(24.5 - 36.5)
Hispanic	19.8	(12.8 - 29.4)
Education		
< High school	36.8	(31.6 - 42.3)
High school grad	33.9	(31.6 - 36.3)
Some college	34.6	(32.1 - 37.2)
College grad	25.4	(23.4 - 27.5)
Household Income		
< $20,000	39.0	(35.2 - 43.0)
$20,000 - $34,999	37.2	(34.0 - 40.4)
$35,000 - $49,999	35.3	(31.9 - 38.9)
$50,000 - $74,999	28.4	(25.4 - 31.6)
≥ $75,000	23.9	(21.6 - 26.3)

[a] The proportion who reported ever being told by a health care professional that they had some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia.

Usual Activities Now Limited by Arthritis by Gender Michigan, 2007



Cardiovascular Disease

2007 MiBRFS

Heart disease and stroke are the first and third leading causes of death, respectively, in both Michigan and the United States.[42-43] More than 685,000 people in the United States died from heart disease in 2003.[44] Cardiovascular disease costs an estimated $300 billion annually.[45] Modifying risk factors offers the greatest potential for reducing death and disability from cardiovascular disease.[45]

In 2007, 4.8% of Michigan adults had ever been told they had a heart attack or myocardial infarction, 4.9% had ever been told angina or coronary heart disease, and 2.8% had ever been told stroke. All three indicators of cardiovascular disease decreased with education and income, and increased with age.

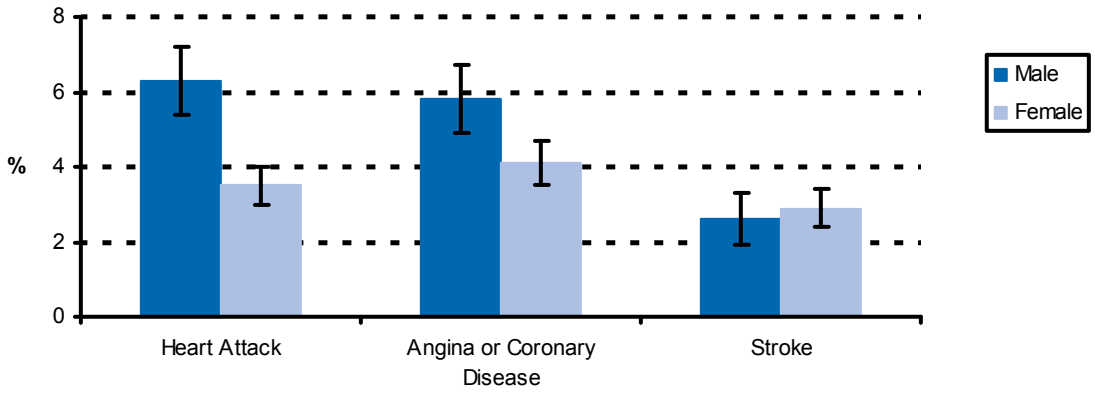
9.3% (8.6-10.0) of Michigan adults reported ever being told that they had cardiovascular disease (i.e. ever told heart attack, angina/coronary heart disease, or stroke).

Men were more likely than women to have ever been diagnosed with a heart attack (6.3% vs. 3.5%) and ever been diagnosed with angina or coronary heart disease (5.8% vs. 4.1%). In addition, men (10.8% [9.7-12.1]) were more likely than women (7.8% [7.0-8.7]) to had ever been diagnosed with any form of cardiovascular disease.

Demographic Characteristics	Ever Told Heart Attack[a] %	Ever Told Heart Attack[a] 95% Confidence Interval	Ever Told Angina or Coronary Heart Disease[b] %	Ever Told Angina or Coronary Heart Disease[b] 95% Confidence Interval	Ever Told Stroke[c] %	Ever Told Stroke[c] 95% Confidence Interval
Total	**4.8**	**(4.4 - 5.4)**	**4.9**	**(4.5 - 5.5)**	**2.8**	**(2.4 - 3.2)**
Age						
18 - 34	0.4	(0.1 - 1.1)	0.2	(0.1 - 0.9)	1.2	(0.6 - 2.5)
35 - 44	2.1	(1.3 - 3.4)	1.2	(0.6 - 2.2)	0.6	(0.3 - 1.3)
45 - 54	2.7	(1.9 - 3.7)	3.1	(2.2 - 4.3)	1.8	(1.2 - 2.7)
55 - 64	7.8	(6.3 - 9.7)	9.4	(7.8 - 11.4)	3.3	(2.4 - 4.4)
65 - 74	13.6	(11.3 - 16.3)	13.7	(11.4 - 16.4)	6.0	(4.6 - 7.9)
75 +	18.4	(15.8 - 21.2)	18.7	(16.2 - 21.5)	11.4	(9.3 - 13.8)
Gender						
Male	6.3	(5.5 - 7.3)	5.8	(5.0 - 6.8)	2.6	(2.0 - 3.4)
Female	3.5	(3.0 - 4.0)	4.1	(3.6 - 4.7)	2.9	(2.5 - 3.5)
Race/Ethnicity						
White non-Hispanic	4.6	(4.1 - 5.2)	5.1	(4.6 - 5.7)	2.3	(2.0 - 2.8)
Black non-Hispanic	5.0	(3.8 - 6.7)	3.9	(2.8 - 5.4)	5.2	(3.8 - 7.0)
Other non-Hispanic	8.9	(6.0 - 13.0)	5.6	(3.8 - 8.4)	2.5	(1.3 - 4.8)
Hispanic	1.9	(0.7 - 4.9)	2.4	(0.9 - 6.1)	3.4	(0.7 - 15.0)
Education						
< High school	9.3	(7.2 - 12.0)	7.0	(5.2 - 9.3)	5.7	(4.0 - 8.1)
High school grad	5.8	(4.8 - 6.9)	6.1	(5.2 - 7.3)	4.0	(3.1 - 5.2)
Some college	4.2	(3.5 - 5.2)	4.7	(3.9 - 5.6)	2.3	(1.8 - 3.1)
College grad	3.3	(2.6 - 4.2)	3.4	(2.7 - 4.3)	1.3	(0.9 - 1.8)
Household Income						
< $20,000	8.3	(6.7 - 10.2)	8.0	(6.5 - 9.9)	6.8	(5.3 - 8.6)
$20,000 - $34,999	7.8	(6.4 - 9.4)	7.2	(5.9 - 8.7)	4.7	(3.4 - 6.5)
$35,000 - $49,999	4.2	(3.0 - 5.8)	5.0	(3.9 - 6.4)	2.1	(1.4 - 3.2)
$50,000 - $74,999	2.8	(2.0 - 4.0)	3.3	(2.4 - 4.7)	1.1	(0.7 - 1.8)
≥ $75,000	2.5	(1.8 - 3.4)	2.7	(2.0 - 3.6)	0.9	(0.6 - 1.4)

Among all adults, the proportion who had ever been told by a doctor that: [a] they had a heart attack or myocardial infarction, [b] they had angina or coronary heart disease, or [c] they had a stroke.

Cardiovascular Disease by Gender
Michigan, 2007



Diabetes

2007 MiBRFS

Diabetes mellitus is a chronic disease characterized by high glucose levels, owing to insufficient production of insulin by the pancreas or to a reduction in the body's ability to use insulin. In Michigan, diabetes was the sixth leading cause of death with 2,823 individuals in 2006 and was considered the primary cause in approximately three percent of all deaths. Obesity, poor diet, physical inactivity, and high blood pressure are just a few risk factors that are associated with the increase in diabetes prevalence.[46]

In 2007, an estimated 9.0% of Michigan adults had ever been told by a health care professional that they have diabetes. This prevalence increased with age from 0.9% of those aged 18-24 years to 22.0% of those aged 65-74 years. The proportion of those who had diabetes declined with increasing education and income levels. Blacks were nearly twice as likely as Whites to have ever been told by a health care professional that they had diabetes (14.8% [12.3-17.8] vs. 7.8% [7.1 -8.5]).

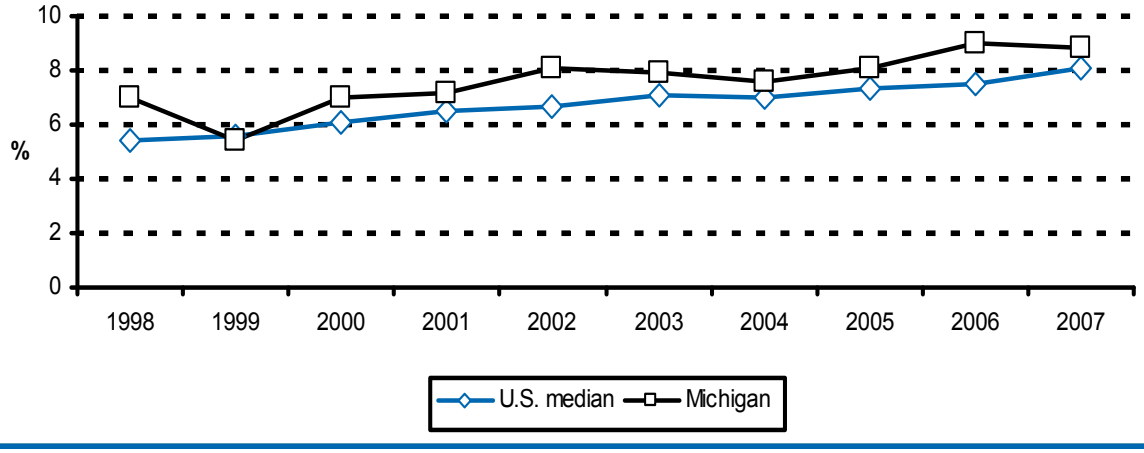
In Michigan, there has been an increase in the prevalence of diabetes between 1998 and 2007 from 6.8% to 9.0%. Michigan's diabetes prevalence estimate has been consistently higher than the U.S. median for all but one year.

Michigan adults who were obese were nearly two and a half times as likely as those who were overweight and nearly five times as likely as those who were not overweight or obese to have diabetes in 2007 (17.7% [15.9-19.6], 7.4% [6.3-8.6], 3.7% [2.9-4.6] respectively). In addition, Michigan adults with a disability were over three times as likely to have ever been told they had diabetes when compared to non-disabled individuals (18.8% [16.8-20.9] vs. 6.0% [5.3-6.7]).

Demographic Characteristics	Ever Told Diabetes [a] %	95% Confidence Interval
Total	**9.0**	**(8.3 - 9.7)**
Age		
18 - 24	0.9	(0.3 - 2.6)
25 - 34	1.8	(0.9 - 3.4)
35 - 44	5.0	(3.6 - 6.9)
45 - 54	7.8	(6.4 - 9.5)
55 - 64	16.9	(14.8 - 19.3)
65 - 74	22.0	(19.2 - 25.0)
75 +	20.3	(17.6 - 23.2)
Gender		
Male	9.5	(8.4 - 10.8)
Female	8.5	(7.6 - 9.4)
Race/Ethnicity		
White non-Hispanic	7.8	(7.1 - 8.5)
Black non-Hispanic	14.8	(12.3 - 17.8)
Other non-Hispanic	11.6	(8.1 - 16.3)
Hispanic	9.0	(4.9 - 16.1)
Education		
< High school	12.6	(9.9 - 15.9)
High school grad	11.2	(9.8 - 12.7)
Some college	9.0	(7.8 - 10.4)
College grad	5.8	(4.8 - 7.0)
Household Income		
< $20,000	16.3	(13.8 - 19.1)
$20,000 - $34,999	11.4	(9.6 - 13.4)
$35,000 - $49,999	8.2	(6.7 - 10.1)
$50,000 - $74,999	8.0	(6.4 - 10.0)
≥ $75,000	4.6	(3.6 - 5.9)

[a] The proportion who reported that they were ever told by a doctor that they have diabetes. Adults who had been told they have prediabetes and women who had diabetes only during pregnancy were classified as not having been diagnosed.

Diabetes
U.S. vs. Michigan, 1998-2007



Osteoporosis

2007 MiBRFS

Osteoporosis is a chronic condition in which the bones, primarily in the hip, spine, and wrist, become weak and are at increased risk of fracture. It is estimated that over 10 million people in the United States currently have this disease, with an additional 34 million people having low bone mass, a precursor to osteoporosis. Approximately eighty percent of those diagnosed with osteoporosis are women.[47]

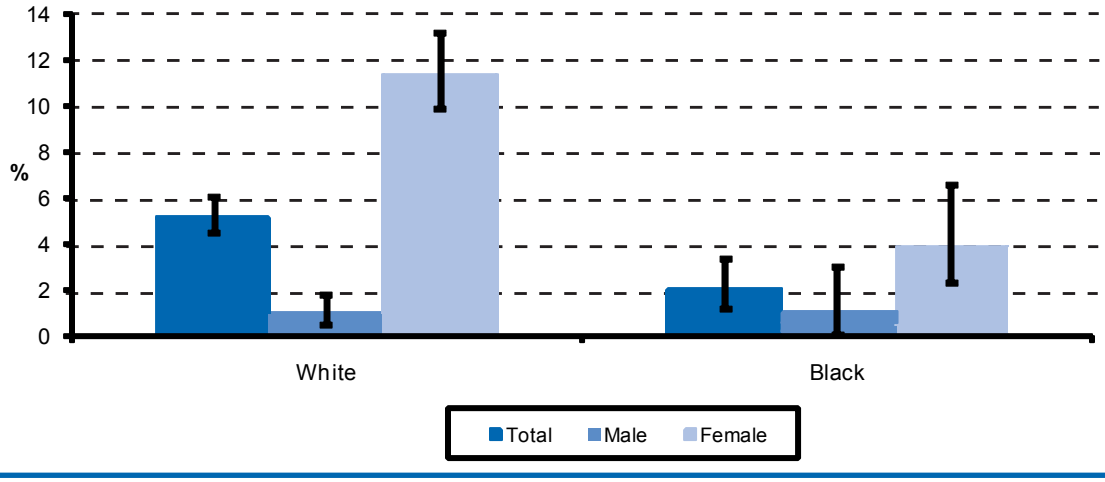
In 2007, an estimated 4.7% of Michigan adults had ever been told by a health care professional that they have osteoporosis. This prevalence increased with age from 0.4% of those aged 35-44 years to 18.7% of those aged 75 years and older. Females were much more likely than males to have ever been told they have osteoporosis (10.2% vs. 0.8%), and the proportion of those who had osteoporosis declined with increasing income levels.

When investigating these gender differences among different racial groups, White females were over ten times more likely than White males to have ever been told they had osteoporosis (11.4% vs. 1.0%), and Black females were also much more likely than Black males to have ever been told they had osteoporosis (3.9% vs. 0.4%). In addition, White females were more likely than Black females to have ever been told they had osteoporosis (11.4% vs. 3.9%).

Demographic Characteristics	Ever Told Osteoporosis[a] %	95% Confidence Interval
Total	**4.7**	**(4.1 - 5.5)**
Age		
18 - 24	0.0	---
25 - 34	0.0	---
35 - 44	0.4	(0.1 - 1.1)
45 - 54	3.8	(2.5 - 5.8)
55 - 64	8.1	(6.1 - 10.8)
65 - 74	12.9	(9.7 - 17.0)
75 +	18.7	(15.2 - 22.8)
Gender		
Male	0.8	(0.4 - 1.5)
Female	10.2	(8.9 - 11.8)
Race/Ethnicity		
White non-Hispanic	5.2	(4.4 - 6.0)
Black non-Hispanic	2.1	(1.2 - 3.5)
Other non-Hispanic	2.6	(0.9 - 7.2)
Hispanic	6.6	(2.8 - 15.0)
Education		
< High school	3.6	(2.0 - 6.5)
High school grad	6.4	(5.1 - 8.1)
Some college	4.8	(3.6 - 6.3)
College grad	3.4	(2.5 - 4.6)
Household Income		
< $20,000	8.0	(5.7 - 11.0)
$20,000 - $34,999	5.4	(3.9 - 7.3)
$35,000 - $49,999	4.9	(3.3 - 7.1)
$50,000 - $74,999	2.7	(1.6 - 4.6)
≥ $75,000	2.2	(1.5 - 3.4)

[a] The proportion who reported that they were ever told by a health care professional that they have osteoporosis.

Ever Told Osteoporosis by Race and Gender
Michigan, 2007



BRFSS Methods

The national Behavioral Risk Factor Surveillance System (BRFSS) consists of annual telephone surveys conducted independently by the states, District of Columbia, and U.S. territories and is coordinated through cooperative agreements with the Centers for Disease Control and Prevention (CDC). The annual Michigan Behavioral Risk Factor Surveys (MiBRFS) follow the CDC protocol for the BRFSS and use the standardized English core questionnaire. The 2007 MiBRFS data were collected quarterly by the Institute for Public Policy and Social Research at Michigan State University (http://www.ippsr.msu.edu). The sample of telephone numbers was selected using a list-assisted, random-digit-dialed methodology with disproportionate stratification based on listedness.

The 2007 MiBRFS data were weighted to adjust for the probabilities of selection (based on the probability of telephone number selection, the number of adults in the household, and the number of residential phone lines) and a post-stratification weighting factor that adjusted for sex, age, and race (using 2006 estimated Michigan population distributions with bridged race categories).[48]

Prevalence estimates and asymmetric 95% confidence intervals (CIs) were calculated using SAS-Callable SUDAAN (version 9.01), a statistical computing program that was designed for analyzing data from multistage sample surveys.[49] If the CIs for two estimates from different subpopulations or different survey years did not overlap, they were assumed to be statistically different. In addition, selected pair-wise comparisons were tested for statistical significance using a t-test or chi-square. Although results of these statistical tests are not reported, they were used to guide the presentation of results.

Unless otherwise specified, respondents who answered that they did not know or refused to answer were not included in the calculation of estimates.

For comparison purposes, the median of estimates from all participating states and territories was used as a national estimate. All 50 states, three territories (Puerto Rico, Guam, and the Virgin Islands), and the District of Columbia participated in the 2007 BRFSS.

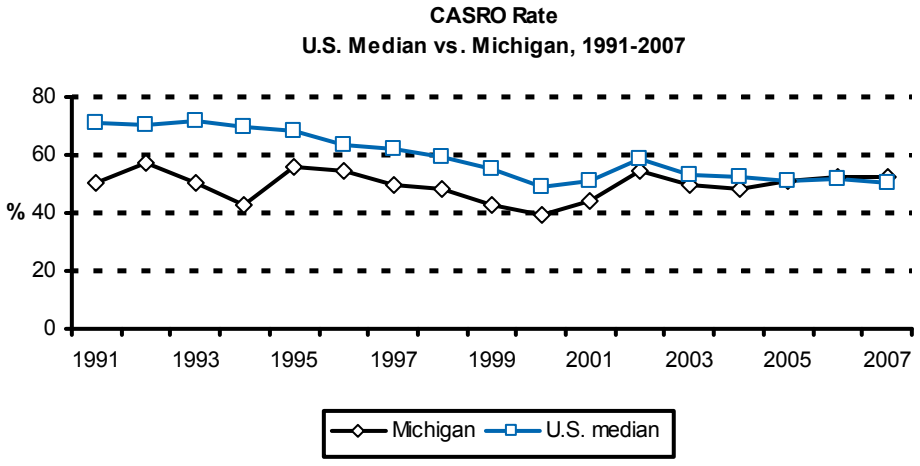
Sample Results for the 2007 MiBRFS

A total of 78,600 telephone numbers were used for the 2007 MiBRFS. The total number of eligibles was 11,250, of which 7,505 resulted in a completed or partially completed interview; 50,393 were ineligible; and 16,957 were of unknown eligibility.

The CASRO (Council of American Survey Research Organizations) response rate is a measure of respondent contact and cooperation. This rate includes completed interviews and partial interviews, in which at least 50 percent of the core questionnaire has been completed, in the numerator and an estimate of the number of eligible sample units in the denominator (including a proportion of the unknowns). The CASRO response rate for the 2007 MiBRFS was 52.6%.[50]

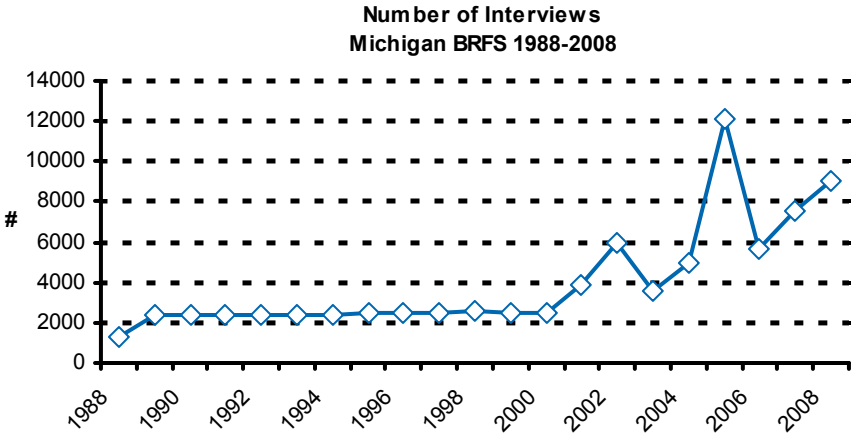
Health of the MiBRFS

The CASRO rate for MiBRFS has increased or held steady in the recent past, at a time when the median of CASRO rates for other states has been dropping. The survey contractor, Office of Survey Research in the Institute for Public Policy and Social Research at Michigan State University, has worked diligently to improve the CASRO rate.



BRFSS Methods, continued

In addition, MDCH has recently been able to increase the number of interviews each year. A larger sample size increases the utility of the survey by providing more precise estimates, allowing for increased number of topics to be covered each year, and enabling the calculation of estimates for more demographic and geographic subpopulations. For example, single year estimates were calculable for Hispanic adults for the first time in 2005, because the large sample size allowed for adequate number of completed interviews in this group. Although it is doubtful that the 2005 experience will be repeated, it is important to maintain a sample size of 6,000 or more completed interviews each year.



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